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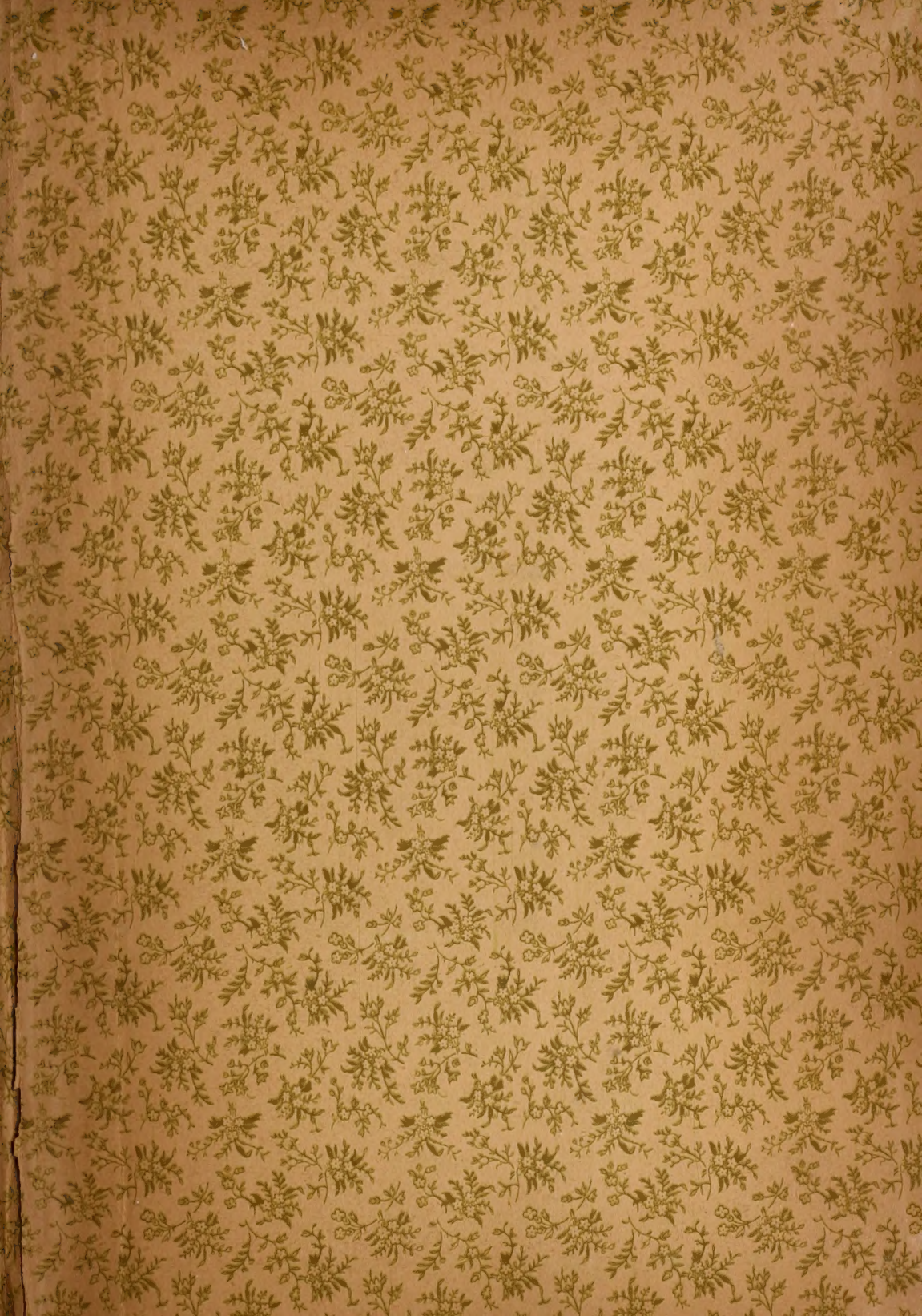
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THE

Dental Summary

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L. P. BETHEL, M. D., D. D. S.
COLUMBUS, OHIO

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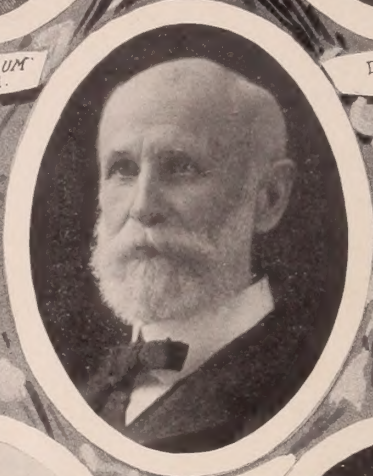
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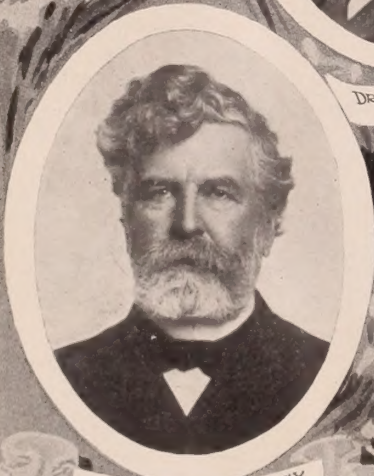
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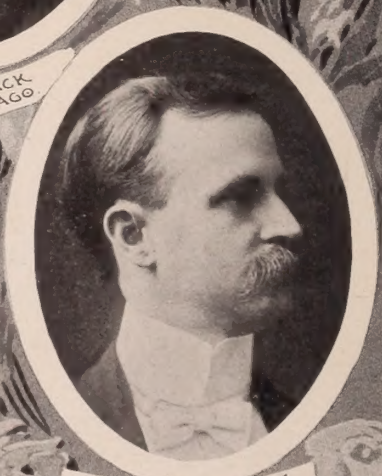
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SUPERNUMERARY TEETH *

By G. V. Black, M. D., D. D. S., Sc. D., L. L. D., Chicago, Illinois

Dean Northwestern University Dental School, Chicago

IN dental literature there are many notices of dental anomalies or freak teeth reported as curiosities of tooth development. An anomaly is generally defined as something deviating from the regular or normal form, and in general indicates that the thing described is unnamed.

Supernumerary teeth have generally been classed among these, and among the reports of anomalies, a considerable number of cases of supernumerary teeth have appeared. Much the greater number have appeared in the journal literature or in books as short notices of the fact that these occur. Magitot published a treatise in French on anomalies of the

* Read before the Semi-Centennial Jubilee meeting of the Indiana State Dental Association, June 4-6th, 1908.

teeth in 1877, and several other treatises have taken up this subject. These have been written with the specimens available to the authors at the time, and the views expressed were based on this material, which, upon any one particular class of deviations from the normal, was generally in small amount. The reports of supernumerary teeth in the journal literature have generally been in single paragraphs or very short articles descriptive of an individual case, occasionally two or three. Sometimes these descriptions were aided by an illustration. The notices of supernumerary teeth appearing in books have been of similar character. In the Dental News Letter and in the Dental Cosmos, from the time of the beginning of these publications, to the close of the volume of 1907—fifty-seven years—fifty-eight cases of supernumerary teeth have been reported, a number of which have been illustrated. In other journals so few were found that the search was abandoned. It seems fair to suppose that not one in ten, possibly not one in fifty, of the cases observed have been reported. There has been no considerable discussion of the subject in any of these reports. In the books it has been much the same. Generally the subject is disposed of in a very few paragraphs, and with but few illustrations of cases. *Tomes*, 1859, gives one cut; *Salter* gives three cases and several illustrations of individual supernumerary teeth removed; *Burchard*, 1898, gives two cuts; *Coleman*, two cuts; *Wedl*, one cut; *Preiswerk*, one cut; *American System of Dentistry*, four cuts. A number of others give one or two cuts. Really, the more intrinsic discussion of the subject has been by histologists and embryologists in the endeavor to account for the origin of supernumerary teeth. This will be noticed again later.

There has been but little discussion of the general subject from the clinical standpoint, or of the treatment that should be undertaken to relieve deformities occasioned by the presence of supernumerary teeth. There has been no systematic attempt at classification, or other generalization that would serve as a basis for determining what should or could be done for persons who were disfigured with the presence of different forms of supernumerary teeth. In recent years it has occurred to me that this subject has been neglected, and that the general profession has not sufficient information regarding it to properly attend to the cases presenting in their practice. The publications thus far do not give that information, and the cases occurring to the practitioner in conducting an ordinary practice, are not sufficient in number or variety to give him information that will serve as a sufficient guide. This has been forced upon my attention by circumstances that have become prominent.

First: The number of cases referred to me to know what ought to be done.

Second: The number of cases coming to my attention in which persons have grown to maturity badly disfigured with supernumerary teeth, when treatment, rightly directed, at the proper time, would easily have

relieved them of a deformity of the mouth and of the features that had become irremediable, as will be apparent in the illustrations.

Again, cases have come to my notice in which the wrong thing had been attempted, resulting in harm instead of benefit to the patient.

I have been impressed with the thought that such things should not occur in a country that has such a number of men whose business it is to know about these things. For instance: A lady was sent to me by an intelligent practitioner, with her little son who had two supernumerary teeth occupying the place of the normal central incisors, and were forcing these, which were just showing under the gums, into an unsightly position. After a momentary examination, I directed that the little fellow be assigned to one of the students, that an impression be taken, and that afterward the supernumerary teeth be removed. As I did so, I saw a frightened look upon the mother's face. On inquiry as to her trouble, she said she was much surprised that the case should be disposed of in that off-hand way. for, she related, she had taken the child to several intelligent practitioners, each of whom regarded it as most extraordinary and did not know what ought to be done. She seemed disposed to withdraw at once. I asked her to go with me to the museum and talk the matter over, and there I showed her cast after cast of similar cases to that in her child's mouth. This evidence of familiarity with this class of cases seemed to convince her that I knew what to do, and she was quickly satisfied. A number of similar cases have occurred in which parents have been at much trouble to find proper treatment. Such things, and such a fright as I found this good mother, just mentioned, in, should not occur. Our people should meet with prompt and intelligent service in such cases, and at once obtain well directed treatment. It means much to a child to become a man or woman, with deformed features because of the presence of supernumerary teeth. when a well directed effort at the proper time would render the features normal; yet case after case has come to my notice, and will appear in the appended illustrations, in which persons have been allowed to grow up to maturity badly deformed, when so simple an operation as the extraction of one or two supernumerary teeth would have rendered their features normal. This occurs, I am persuaded, because this particular subject has received so little attention that many otherwise well informed practitioners have not the necessary information to feel safe in their treatment of the cases presented. These conditions have prompted me to collect every available case of supernumerary teeth, in the form of models, when possible, or in notes, and to follow, carefully, results of treatment, until now something over two hundred cases have been studied and a majority of these are available in models and illustrations.

In dentistry there are still a number of important things of infrequent occurrence besides supernumerary teeth that have not received sufficient study and have not yet been so presented, either in our schools or in our literature, as to afford the dentist in the ordinary lines of practice a

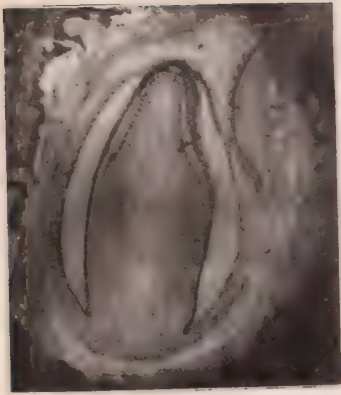


Fig. 1.

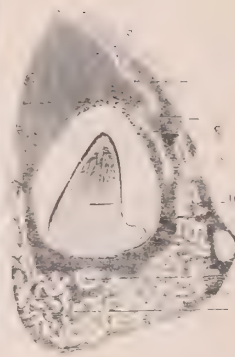


Fig. 2.

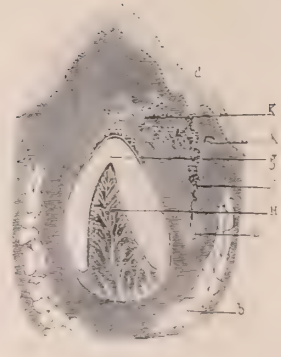


Fig. 3.



Fig. 4.

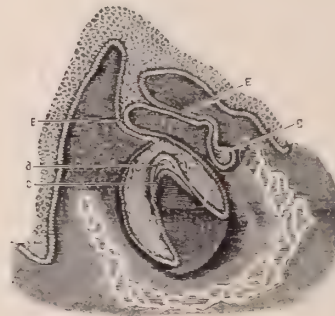


Fig. 5.

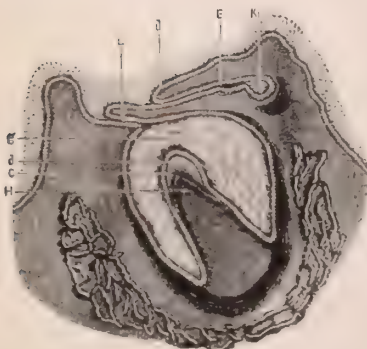


Fig. 6.

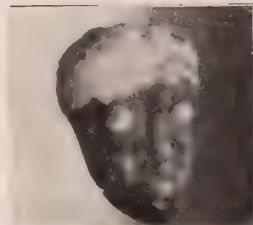


Fig. 7.

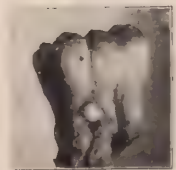


Fig. 7S.

FIRST GROUP—EMBRYOLOGY.—FIGURES 1-7.

Fig. 1. A developing milk tooth with bud for the formation of permanent tooth, given off from original epithelial cord (to the right in picture) at point of junction of cord with wall of crypt of milk tooth—the usual form.—*Photograph by Dr. F. B. Noyes.*

Fig. 2. A developing milk tooth with bud for the formation of the permanent tooth, given off from the epithelial cord (to the right in picture) at junction of cord with the wall of crypt of milk tooth; also in usual form, but more advanced than in Fig. 1.—*Dean's Translation of Dental Follicle.*

Fig. 3. A developing milk tooth from the fetus still older, showing the original cord broken up into scattered epithelial elements, and the bud for the formation of the permanent tooth separated from the crypt of the milk tooth.—*Dean's Translation of Dental Follicle.*

Fig. 4. Another developing milk tooth of about the same advancement as in Fig. 3, but showing epithelial cells left from the absorption of the cord gathered into whorls at K' and K. It is supposed that it is from such whorls as these that the conical supernumerary teeth, broken cones, enamel drops and dentigerous cysts, etc., are formed.—*Dean's Translation of Dental Follicle.*

Figs. 5 and 6. These illustrations show a cord given off from the original ingrowing epithelial lamina, which is an abnormal form. While it is not shown in these specimens that there were the usual buds given off from the cords as in the other illustrations, such buds might easily have been lost sight of in cutting the sections; it is the supposition that these unusual epithelial off-shoots do sometimes form supernumerary teeth which are likely to be of normal form for the region.—*Black, in Dean's Translation of Dental Follicle.*

Fig. 7. Two enamel drops on root of molar tooth. (See also Enamel Drop in Fig. 78.)

sufficient basis for action in remedying them. These are generally those freaks, so-called, or anomalies, that are only occasionally seen. As time passes these are being caught up, one by one, and explained. It then falls into its place as a thing known and understood. Then as a freak—an anomaly, a thing without a name—it disappears.

I was particularly struck with this in a recent examination of the literature respecting anomalies and freaks in noting the reports of third dentition. Beginning a tabulation of the kinds of anomalies reported, with the earliest dental journal literature, reports of cases of third dentition were frequent. This continued to about 1875, when it ceased so suddenly as to cause surprise. On looking back over the literature to find the cause of this, I found a number of well written explanations of what had been supposed to be third dentitions that were so clear and satisfactory that third dentitions faded out of the minds of intelligent men. The teeth supposed to be third dentitions were always teeth of the normal set, or supernumerary teeth, that had become impacted. These have been brought to the surface by the shrinkage of the alveolar processes, after the extraction or loss of other teeth. These are most generally found appearing under plates supporting artificial teeth, and have become so well known as impacted teeth that they no longer excite wonder. We no longer speak of an odontome or a dentigerous cyst as an anomaly: we call them by their names. In time all such accidents of development, mis-shapings, or mis-buildings, should become well known. They will certainly do so if their collection in museums, where they can be classified and studied collectively in large numbers, is carefully followed by our dental schools. The best opportunity for such collections is in our larger schools, where the great clinics draw in eight to ten or twelve thousand persons per year. But the general profession can do much to assist in this work by sending casts of cases of supernumerary teeth or other abnormal things relating to the teeth, with clearly written explanations of the cases.

ORIGIN OF SUPERNUMERARY TEETH.

I think it may be said that every supernumerary tooth arises from one of two sources: first, from supernumerary buds given off from the band of epithelium that gives rise to the dentitions, deciduous and permanent. These may be given off from the original ingrowing epithelial lamina (Figs. 5 and 6), or may be given off from the epithelial cords of the buds which form the normal teeth (Figs. 1 and 2).

Second, they may be developed from the whorls of epithelial cells which form in the breaking up of the epithelial cords (Figs. 3 and 4), and which persist after the beginning of the absorption of these, by which the cords are separated from the developing enamel organs and from the original epithelial lamina. Some of these whorls of epithelial cells evidently do persist, develop a dentine germ, and form supernumerary teeth.

In this view of the case, supernumerary teeth may be of three sorts: (1) those derived from supernumerary buds from the original lamina, (Figs. 5, 6), will be supernumeraries of normal form for the region, as incisors, bicuspid or molars; (2) those developing from whorls (Figs. 3, 4), are more apt to be of the simple or multiple conical forms developing a dentine germ, dentine, pulp chamber and canal; (3) these whorls may come in contact with the dentine germ of a growing tooth, and develop enamel attached to the normal tooth or another supernumerary tooth. These latter are truly parasitic tooth germs forming only a rounded enamel cap, into the concave part of which some of the dentinal tubules of the host penetrate, but they develop no independent dentine or pulp. They are the so-called enamel drops so frequently seen on the sides of the roots of teeth. (Figs. 7, 78.)

Besides these varieties, the accident of position, of form, attachment to neighboring normal teeth or other supernumerary teeth, or the manner of such attachment, as the fusion of roots of teeth by cementum, the uniting of dentine germs during growth, the folding of enamel germs together forming misshapen teeth, etc., give a considerable variety for classification that will be noticed later.

To understand these statements more fully, it should be distinctly understood that the enamel-forming epithelial cells constitute the true tooth germ, and control the formation of the connective tissue dentine germ. Perhaps one of the most compact and understandable statements of this idea is that given by the late Dr. M. S. Dean in the transactions of the American Dental Association, 1878, pages 50 to 58. In accordance with this view, the enamel germ in starting its growth in the midst of the connective tissue of the forming jaws excites the formation of a dentine germ wherever the growth of the enamel germ may occur. No previously formed dentine germ is necessary. I have, myself, made many histological dissections of human, porcine, ovine and bovine embryos in the study of this general subject; and, while I have not seen anything that could definitely be declared a supernumerary tooth germ, I have seen in human embryos irregularities that might have led to the formation of such teeth. Two illustrations of these have been published in Dr. M. S. Dean's translation of Legros and Magitot's work on the Origin and Formation of the Dental Follicle (Figs. 5, 6). They are Figs. 30, 31, of the summary of illustrations, pages 200 and 201. In both of these the epithelial cords for permanent teeth, or possibly supernumerary teeth, have arisen abnormally from the original lamina instead of from the cord or wall of the crypt of the deciduous tooth.

The interest in this view and the certainty of its correctness is much enhanced by the observation that in the supernumerary teeth of the deciduous set there are practically no conical teeth or enamel drops. In these deciduous supernumeraries we notice in all cases the effort, at least, to form the normal form of tooth for the region. True, we find the gemmae

and the dichotomies among these, as well as in the permanent teeth, and some supernumeraries that are not fully normal in form, but no truly conical teeth.

This idea of the formation of supernumerary teeth of dentigerous cysts and of odontomes, is by no means new, but is the one of several conflicting ideas which seems to have survived after the careful scrutiny of scientific men. In giving this, I have no thought of saying that it is actually proven; but only that with what is now known, it seems much the more plausible theory.

Dr. Dean states this in a note in his translation of the dental follicle, (Legros and Magitot) 1880, page 65:

"In a foot-note these authors give their theory of the origin of the supernumerary teeth; but, as Dr. Magitot (the surviving author of this work) has since modified his views in relation to this phenomenon, a mere statement of the theory advanced by them will here be sufficient. Drs. Legros and Magitot maintained that the supernumerary teeth originate either from the epithelial lamina, from supernumerary buddings arising between the normal number, or that they are off-shoots from the epithelial cord. In the first case the development of these teeth would be precisely similar to that of the deciduous teeth; in the other, to that of the permanent teeth, with the exception of the first molar.

The present view of Dr. Magitot upon this subject (as recorded on pages 36, 37, of his treatise on the Anomalies of the Teeth, 1877), are in accord with those previously advanced by Kollman, and are based upon the well known fact, that when the epithelial cord or neck, which connects the enamel-organ with the epithelial lamina, becomes severed by the closure of the follicle, the cells, of which the cord is composed, multiply to a greater or less extent, and their epithelial proliferations sometimes continue adherent to the remains of the cord, and to the follicle itself, until they are absorbed; and sometimes considerable masses become detached, and, assuming various forms, wander into the depths of the jaws, (Figs. 3 and 4). These epithelial proliferations, according to Kollman and Magitot, may become the enamel germs from which the supernumerary teeth originate.

"Now, in order that a tooth may be produced, a supernumerary dentine-papilla must be provided for this adventitious enamel-organ. This would result as a natural consequence, if the theory advanced by the translator of this work in a recent Report on Dental Physiology, before the American Dental Association, is correct. (See Trans., 1878, pages 50-58). In this paper it was maintained that dentine-papillae may originate from any point of the dentinal sheet of tissue (as described by Dursy), with which the epithelial mass comes in contact; that it is solely through the influence of the enamel-organ upon this tissue, that the development of a dentine-papilla is induced. If this be true, the origin of a supernumerary

dentine-papilla is readily accounted for; while otherwise, special papillae must originate independently, and coincidentally with the supernumerary enamel-organ—a circumstance that does not come within the range of probabilities.”

Thus, also, it seems to me, we find a rational and satisfactory explanation of the origin of those families of dwarfed teeth found in dentigerous cysts.—(Tr.)

In another place, page 136 of the Dental Follicle, Dr. Dean has this to say of the irregularities of the development of the germs of the teeth: “Nearly all of the most eminent histologists of the present day—Tomes, Kolliker, Waldeyer, Frey, Owen, Wedl, and I know not how many others, entertain essentially the same views in regard to this phenomenon as are here set forth by Drs. Legros and Magitot. There are, however, a few distinguished writers, foremost among whom is the author you named, who believe that all the permanent teeth originate independently of the temporary set. Then, again, we have one histologist, our neighbor, Dr. G. V. Black, of Illinois, whose extensive observations in this direction have convinced him that, although the epithelial cords of the twenty anterior permanent teeth generally arise from those of the temporary follicles, yet that they do sometimes emanate directly from the epithelial lamina. It would appear from Fig. 30, and also Fig. 31 (Figs. 5, 6) in the Summary of Illustrations (drawings of which were kindly furnished me by this gentleman), that his views are demonstrated beyond question. The histological specimens from which these drawings were taken have been examined by myself and others; and, saving a few minor and unimportant details, they are faithfully represented in these cuts. I have the assurance of Dr. Black that these were taken by himself from the incisive region of different human embryos. In these figures the epithelial cords of the permanent follicles appear to emanate directly from the lamina; in Figs. 32 and 35, from the epithelial cord; and in Figs. 26, 27 and 28, from the primary follicle itself, rather than from its cord. (For these five figures, also, see Summary.) If all of these figures are true representations of the parts themselves, the secondary cord may emanate directly from either the lamina, the cord, or the follicle itself.”

These quotations show clearly that the views which I have stated of the formation of supernumerary teeth are by no means new or unknown, but really have been carefully discussed by scientific men in times passed. I was personally familiar with these views at the time when I was making numerous microscopic dissections of human embryos and becoming familiar with the conditions of the development of the dental follicles from personal observation. During the work of translating the book of Legros and Magitot on the Dental Follicle, Dr. Dean made use of my slides for the interpretation of the work of these men, and for testing the accuracy of their statements, finding only the cases of decisive variation from their state-

ments shown by the cuts 31, 32 (Figs. 5, 6), which have been mentioned and which are regarded as irregularities of development. The discussions of that time were purely of embryology and development. There was no discussion from the practitioner's standpoint.

From my personal observation of supernumerary teeth, I cannot conclude that they are an evidence of atavism, or return to an earlier type. I would prefer the German word, *misbildungen* (misshapings or misbuildings), for use instead of abnormality. The word *misbuilding* expresses the fact without the reproach which seems often to belong to the term abnormality. Neither can I concede that supernumerary teeth are an evidence of degeneracy. Certainly degenerate persons may have supernumerary teeth, but the person is not necessarily a degenerate because of having supernumerary teeth. Several of the brightest persons of my acquaintance had the most abominable supernumerary teeth; but by proper treatment grew up with perfect features. For them to have retained the deformity would have blasted their prospects in life and might have caused a comparative degeneracy of thought and action, but these persons were in no proper sense degenerates, as their lives well show. Some one, I think it was the late Dr. W. C. Barrett of Buffalo, has made the remark in support of the idea of atavism, that there never was a greater number of teeth, normal and supernumerary, than the forty-four of the typical mammalian denture. In that case, a greater number belonging clearly to any one region, as incisors, bicuspid, etc., will break that spell, and I will show some such cases among the illustrations. Dr. A. H. Thompson of Topeka, Kansas, has remarked that if supernumerary teeth are to be regarded as an evidence of reversion to lower forms, the prevalence of simple conical teeth carries the reversion far beyond the mammalian types to the conical forms of the fishes and reptiles. This is too far a reach into degeneracy, as it seems to me, for even Dr. Talbot to consider in such a connection.

Several reports have been noticed in which persons have connected the occurrence of supernumerary teeth with accidents to the teeth or jaws of children, by which enamel organs may have been broken up. The late Dr. I. P. Wilson, of Iowa, met with two cases, the casts of which are in my collection, in which he felt very certain that the supernumerary teeth were caused to form in this way. But as the normal incisors finally made their appearance, this explanation was no longer tenable. In his German edition, *Preiswerk* also speaks of this, but in the English translation which has recently appeared, this statement has been left out. I have a number of examples of teeth that have been misshapen by accidents occurring during their development, but none of them give a thought of possible supernumerary teeth resulting.

(To be Continued.)

PORCELAIN AND GOLD INLAYS.

By A. W. Starbuck, D. D. S., Denver, Colorado.

Superintendent of Infirmary, Colorado College of Dental Surgery, Denver, Colorado.

IN presenting these articles upon porcelain and gold inlays it is the desire of the writer to furnish an outline of procedure which has proven very satisfactory in his hands, as well as his many students'. He claims no originality to any of the methods, rather it is a collection of the good ideas introduced and practiced by the eminent porcelain and gold workers of the day.

The equipment recommended for porcelain inlays may be criticised by many owing to its simplicity. But as this is intended more for the practitioner who has been shut out from the use of porcelain owing to the extensive and expensive equipment supposed to be necessary, we will eliminate



Fig. 1

Fig. 2

Fig. 3

special instruments as much as possible thus showing the possibilities using the ordinary equipment of general practice.

CAVITY PREPARATION FOR PORCELAIN INLAYS.

Generally speaking, cavities for porcelain inlays should be free from undercuts in the direction in which the matrix is to be removed. There should be flat seats at right angles to all possible stress from mastication. All walls should be as nearly as possible at right angles to the surface of the tooth. And all margins should be sharp and not beveled.

The cavities here presented are a composite of the good points gleaned from a careful study of a series of models sent the writer by about thirty of the prominent porcelain men from different parts of the country.

GINGIVAL CAVITIES.

Gingival cavities should be extended only to include all the decayed area. In doing this, endeavor to get an oval or kidney-shaped cavity as it

is extremely difficult to properly insert an inlay of circular outline. This extension is best accomplished by the use of chisels and inverted cone burs. In this class of cavities there are frequently several small pits on initial seats of decay. These are best united by the use of small inverted cone burs. Then with chisels break down the overhanging enamel walls. This operation should be repeated, first using the inverted cone burs (increasing the size each time), then the chisels until the cavity is extended to sound margins and symmetrical outline. After the desired outline is reached any undercuts that may be present should be cut away and the walls made parallel by the use of square-end fissure burs, or better still, a similar-shaped plug finishing bur.

It is in these cavities we experience so much difficulty in securing a proper color, especially after the inlay has been cemented to place. Consequently great care should be exercised in getting the proper alignment



Fig. 4

Fig. 5

of the margins, also proper depth to the cavity. This being an extremely sensitive portion of the tooth many inlays are failures owing to a lack in depth sufficient to give enough bulk to the porcelain to exclude the influence of the cement, saying nothing of the strength of the inlay.

Many will criticise the use of the parallel walls, citing the difficulty of burnishing a matrix to a cavity of this nature. This objection you will find entirely done away with in the methods suggested later for forming the matrix for this class of cavities. The main objections to flaring walls are the lack of retention and the objectionable change of color in the inlay from cement. The nearer you can get this cement wall parallel to the line of vision the less it will change the color of the inlay.

A final inspection of the cavity should be made to make sure there are no irregularities or small nicks in the margins. This is best accomplished with the use of a lens. The marginal walls should be smooth, yet not polished, as cement will not adhere properly to a polished surface,

The writer can not recommend too strongly the plan of seating the patient in a normal position at this time and carefully viewing the walls of the cavity to make sure they are parallel to the line of vision as this is so essential to the appearance of the inlay when set. How often have we viewed an inlay with pride when the patient was tilted back in the chair, only to be disappointed even to the removal of the inlay when the patient was standing or sitting in a normal position.

SIMPLE PROXIMAL CAVITIES.

Among the many excellent ideas brought forth and taught by Dr. Black and his disciples is one point which, if possible, is of greater value to the porcelain worker than to the gold worker and that is:



Fig. 6

Fig. 7

STUDY THE OCCLUSION

as the durability of an inlay depends largely upon the manner in which stress is brought to bear upon it. This one thing should receive our first consideration. In cases where there is excessive stress porcelain is contra-indicated. However, in cases with moderate or ordinary stress porcelain will prove satisfactory, provided proper cavity preparation is considered and the inlay is carefully baked.

The patient should be requested to close the teeth, first, normally, then have him move his jaws in such a manner that every peculiarity of occlusion at that particular point can be carefully noted. Frequently what at first seemed a favorable case has proved dangerous when considering the lateral movements of the jaws. Many such cases may be improved by slight grinding of an angle of the tooth or the tip of a cusp when this portion is slightly elongated.

In inlays where stress of mastication is a factor of consideration they should always be removed in the direction from which such stress comes. There should also be flat seats antagonizing any force brought to bear from this direction.

Generally speaking, proximal cavities should be so prepared that there will be no difficulty in removing the matrix where there is but slight separation.

Fortunately, the lingual wall is generally the weaker, consequently it is a less sacrifice to cut away this wall to permit the easy removal of the matrix and this is the logical procedure in the upper incisors and cuspids (the teeth we are dealing with mostly), unless we have an abnormal occlusion.

In preparing a single proximal cavity in an upper incisor, first break down the weak enamel walls, using chisels or hatchet and hoe excavators. Then with smooth, square-end fissure burs in the right angle entering from the lingual the cavity may be formed.

The cavity should be slightly larger at the lingual than it is at the labial to permit the removal of the matrix. The axial wall should be as nearly flat as possible and parallel with the long axis of the tooth. The incisal and gingival walls should be at right angles to this. These walls are formed with the sides of the bur, while the square end forms a flat seat under the labial plate. Any imperfections following the use of the bur may be remedied by the use of the hatchet and hoe excavators. All margins should be made at right angles to the surface and should be sharp and well defined. At this time the patient should be placed in a normal position and a close inspection made of the labial margin to make sure it is parallel to the line of vision, and if not it should be so altered to remedy the trouble.

It is needless to say that all remaining decay should be removed. In case this should cause undercuts or pockets they may be filled with cement.

The important points for consideration are: First, the cavity should be larger at the lingual than at the labial; second, the axial wall should be flat; third, the incisal and gingival walls should be at right angles to the axial wall; fourth, there should be a flat seat under the labial plate; fifth, all margins should be at right angles to the surface and not beveled; sixth, the labial wall should be so modified, if necessary, to make it parallel to the line of vision.

In cases where the lingual wall is strong and the cavity is near the labial surface the preparation may be so modified to permit the matrix being removed to the labial. This would be permissible only in very small cavities and those caused by an overlapping tooth and then when it did not involve the lingual wall.

The preparation of a cavity in a lower incisor, regarding the manner of removing the matrix, would depend largely upon the condition of the labial and lingual walls, but it would be preferable to remove to the labial.

In cavities of this class there has been considerable criticism by many as to whether porcelain was indicated in any case. However, time has proven that they will stand, under proper conditions, even equal to the average gold fillings.

Again, it is of the greatest importance to

STUDY THE OCCLUSION.

This is something that should become a habit with every dentist. Very few men even think of the occlusion until the patient goes to leave the chair and complains of the filling or crown being too high. By carefully observing the occlusion on the start, it may prevent after disaster and possibly change the entire procedure.

In cases of an edge to edge bite and showing considerable wear, porce-



Fig. 8

Fig. 9

Fig. 10

lain should be used with great caution, if at all. While teeth with normal occlusion may be filled with porcelain if due consideration is made of the preparation of the cavity and the results will be permanent and serviceable. In all cases we should endeavor to get the maximum thickness of porcelain possible. The method used by some of leaving the labial plate and building up the lingual plate only, at the incisal edge or vice-versa, is a dangerous and frequently disastrous procedure.

The method of cutting away the labial plate, (Figs. 8, 9, 10), to a straight line parallel with the long axis of the tooth and depending upon the depth of cavity and parallel gingival and incisal walls upon the lingual, has merit in cases where the tooth is of considerable thickness labio-lingually and there is sufficient depth of cavity in the direction of the pulp, but as a rule there is not sufficient anchorage to withstand the stress of mastication. The better method, and I think the one adopted by the best

authorities, is to gain additional retention by extending the cavity on the incisal edge, forming a step.

In shaping the labial margins, it is preferable to extend so all portions of the margins will either be at right angles or parallel to the long axis of the tooth. For example, if we had a tooth broken down as illustrated in figure 11, it should be cut away with a carborundum stone until the margin assumes lines illustrated in Fig. 12, rather than shaping it as illustrated



Fig. 11



Fig. 12



Fig. 13

in Fig. 13, or again in a more extreme case as shown in Fig. 14, instead of simply smoothing the surface of the break leaving the general view as it is, it is preferable to form a series of steps as shown in Fig. 15. A cavity thus prepared will show less and in many cases have increased retention. The principal reason for such a procedure, however, is the fact that the fine line of union takes on the appearance of a developmental groove, or a natural crack in the tooth and is hardly noticeable. An inlay that is a shade or two off in color will hardly be noticeable, while a bias margin is noticeable even with a perfect match.



Fig. 14



Fig. 15

The matrix should be removed in the direction from which occlusal stress comes; namely, to the lingual in the upper anterior teeth with normal occlusion. In all cases there should be flat seats antagonizing any such stress.

In preparing cavity Figs. 8, 9, 10, the labial plate may be formed with a knife-edge carborundum stone. The lingual plate is removed with chisels and hoe excavators; then with a smooth fissure bur extend and shape the gingival and incisal walls of the cavity sufficiently to permit the easy removal of the matrix. The axial wall should be flat and parallel with the long axis of the tooth and the gingival and incisal walls at right angles

to this. The junction between these walls should be a well defined angle and not rounded as some advocate. With the end of the bur a flat seat is formed under the labial plate. Then remove any remaining decay and carefully inspect all margins to make sure they are sharp and well defined. Finally, seat the patient in a natural position and carefully examine the labial wall to make sure it is parallel to the line of vision from the cavo-surface angle inward. In other words, only the cavo-surface angle should be in view. Especial attention should be given to the gingivo-labial angle, as it is at this point we have a tendency to cut insufficiently. A cavity of this nature is seldom indicated as it lacks sufficient incisal retention if there is any great amount of stress.

The method preferable and generally used is one where additional incisal retention is obtained by use of a step.



Fig. 16

Fig. 17

Fig. 18

The main portion of the labial wall and the step are formed with a knife-edge carborundum stone. It will be noticed in Fig. 16, that the gingival wall of the step is not quite at right angles to the long axis of the tooth, but dips down slightly as it approaches the axial wall of the step. This is necessary to afford retention from dislodgment to the approximal as the fulcrum is at the cavo-surface angle of the gingival-surface; hence, the inlay in the step moves incisally slightly, if dislodged.

By examining Fig. 17, it will be noticed that the line of the pulpal wall of the step is broken, thus affording additional strength to the porcelain at this point. This is formed with a small inverted cone bur held parallel to the long axis of the tooth. The diameter of the step mesio-distally should be about two millimeters ordinarily and about the same diameter inciso-gingivally at the narrowest point; or, in other words, should be of sufficient dimensions to give strength to the porcelain.

The main portion of the cavity is formed with a smooth fissure bur in the right angle. Special attention should be given to the gingival wall to have it at right angles to the long axis of the tooth, also to have a flat seat under the labial wall. Many advocate grooving this seat near the axial wall, but this is a very dangerous procedure as there is danger of cutting through the dentine to the enamel, which would completely destroy the strength of the wall, as there is no strength to enamel when not supported by dentine. Nor is a groove along the gingival necessary if that wall is perfectly flat and at right angles to stress.

Again inspect all margins carefully to make sure they are smooth and sharp and note the angle of the labial wall, especially the gingivolabial angle in the main portion of the cavity and the gingival wall of the step.



Fig. 19

Fig. 20

Fig. 21

If the labial wall is thin and lacks sufficient dentine to give it adequate strength, there should be an additional step made inciso-gingivally upon the lingual surface.

This is formed with an inverted cone bur in the right angle and should extend from the incisal step to the gingival seat. The step should be on an average about one and one-half millimeters wide and a corresponding depth. Some authorities advise a groove extending inciso-gingivally along this step, which has advantages in many cases, but care should be taken to consider carefully the location and size of the pulp in live teeth.

(To be Continued.)

THE BAR EXTENSION IN PROSTHETIC DENTISTRY; A SUBSTITUTE FOR CLASPS.

By Edward C. Mills, D. D. S., Columbus, Ohio

THE mission of the dentist is the alleviation and preventing of human suffering; and the importance of the latter can hardly be over-estimated when we consider that we control the very threshold of the animal economy, and that upon our skill depends the proper performance of the initial act in the great process of assimilation.

Ours is the task of meeting those contingencies which may disturb that normal functional activity so essential to health and life, and in order to do this properly we must keep in touch with the trend of progress in dentistry through the medium of our current literature. It will supply the friction of minds and methods needed to stimulate dormant thought to action and induce investigation which leads to higher development. It is the speculum through which we behold the inchoate ideas out of which are evolved those accurate methods of practice which are transforming the dental art into an exact science. A résumé of the contributions to dental journals and works furnishes conclusive evidence that the operative branch of our profession has made disproportionately great strides, especially during recent years, owing, no doubt, to the preference given to it by a large majority of practitioners.

Articles on methods of tooth restoration and "preventive dentistry" are so frequent that a layman would suppose the prosthetic department had reached that state of perfection, when "striving to better, oft we mar what's well," that consequently the profession was resting in absolute quiet and content so far as this branch is concerned. On the contrary, the call never before has been louder for a more practical and serviceable substitution for lost teeth. Given the teeth, inlays and prophylaxis may preserve them for aesthetic and practical purposes, but Oslerism having failed to receive popular sanction, we have among us many who have suffered extensive tooth loss prior to this new departure for tooth salvation, and in their declining years find that "the grinders cease because they are few" and are viewing askance that

"Last scene of all * * * *

Sans teeth, sans eyes, sans taste, sans everything."

Co-eval with the substitution of teeth for those that are lost, methods for attachment to the remaining ones have been sought. Mention of binding the teeth with wires in treating fractures of the jaws is found in the writings of Hippocrates (B. C. 460). This seems just a bit modern when we consider that in an Etrurian tomb near Corneto, Italy, 2500 to 3000 years old, was found a mummy whose dental arch contained two substitute teeth attached by gold bands to those adjoining.

But Albucasis, an Arabian physician of the eleventh century is generally given the credit of being the first to recommend substituting other human teeth or teeth carved from bone, for those that have been lost. Ambroise Paré (1517-1590) enters further into details regarding the manner of retention. He recommended gold or silver wire, and in absence of these silk thread or flax.

INTRODUCTION OF THE CLASP.

This method remained in vogue until the second century succeeding, when in 1746, M. Mouton introduced the clasp which superseded the ligature and owing to its general adaptability has continued in use until the present. Our early authors recognized its value as a retainer for partial dentures and it is doubtful whether any work, in which reference is made to prosthetic dentistry, fails to describe it, and the method of application, which instructions are invariably stultified by adding a warning against the deleterious effects upon the teeth to which attachment is made. How-

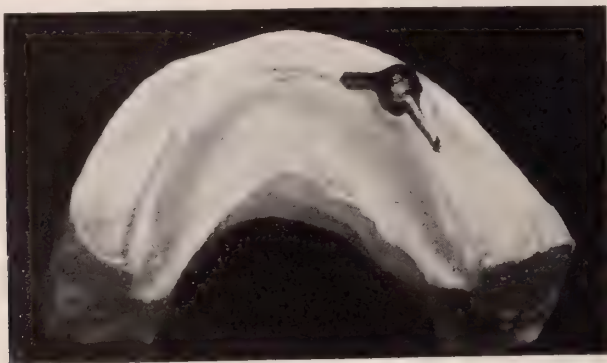


Fig. 1

ever favorable the conditions for the use of a clasp, and whatever may be the merits in the variety of forms that have been introduced, a Nemesis is soon in evidence in the injury to the tissues or perhaps the ultimate loss of the tooth. Whether its utility will outweigh this disadvantage should be the paramount question when its use is considered. A diversity of opinion exists as to the proper method of construction. A narrow clasp of ordinary clasp-metal or of round or half-round wire doubled upon itself is more adaptable, but condemned by many on account of the closeness with which it hugs the tooth and the consequent increase of mechanical abrasion.

A wide clasp is preferred by some on the ground that it cannot engage the tooth so closely, as it rests against the greater diameter and is sustained by contact at a few points only. The space made necessary between the bulbous portion of the tooth and the gingival margin forms a receptacle for particles of comminuted food which, combined with the fluids of the mouth, in a temperature most favorable, forms an excellent media for

developing a luxuriant culture of the ever present oral bacteria, which are always ready to migrate from this "cyclone cellar" into a more secure abode in the dentinal tubules the moment the clasp makes it possible in consequence of abrasions. The looseness in the adaptability of the clasp due to the loss of tissue in consequence of this abrasion causes it to fail in its commission as a retaining appliance and it thus becomes a useless appendage to the denture. In tightening the clasp, instead of holding the piece firmer, it often draws it a little to one side, thus preventing it from settling properly in place where it would be partly supported by suction.

Proper adaptation and stability would perhaps cover the requisites of an ideal clasp, but the latter is impossible so long as the denture rests only upon the soft tissues of the mouth with inevitable injurious effects, especially at the necks of the remaining teeth. Gingival inflammation causing loosening and eventual loss of the teeth usually follows.

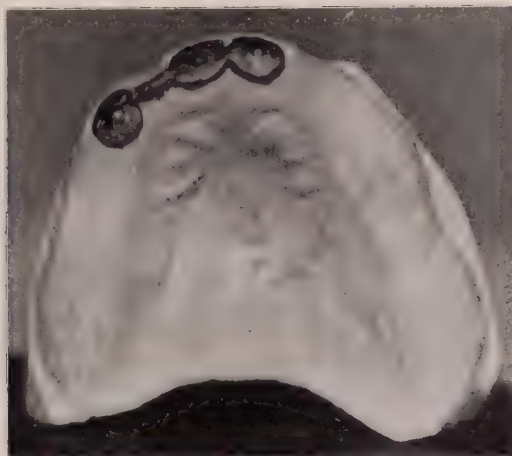


Fig. 2

To obviate this difficulty Dr. Bonwill introduced an "occlusal rest" made of plate or half round wire, bent to proper form and attached to the clasp—the "rest" fitting into the body of a filling or in the sulcus of the tooth, so as not to interfere with occlusion. This method relieves the pressure on the soft tissues and gives the desired stability to the attachment.

To prevent these deleterious effects upon the tooth structure, a popular recourse has been to place a shell crown upon the tooth, to which is fitted the clasp, and unless a mortise is made in the crown for the reception of an occlusal rest, the wearing of the clasp against it will eventually destroy it. Therefore, considering the irreparable damage to the crowns of teeth and adjacent tissues, in using this appliance, we fail in our mission—evidence to condemn it is found in almost every mouth in which it is in use, and despite prophylactic measures, the conditions and

results referred to will manifest themselves, and unless other means are adopted we must reconcile our patient *in totidem verbis*, to an existence without natural teeth.

Cato, when he saw the prosperity of Carthage, beheld in her a power that might again rival Rome in her greed for universal empire, and never failed to end his address, no matter upon what subject, with the words, "*delenda est Carthago.*" So our professional watchword should be "the clasp must go," and dentistry should call upon all its resources for an efficient substitute.

THE ANCHORED DENTURE.

After a series of experiments, Dr. J. B. Beauman introduced his system of anchoring a denture, and in the *Dental Summary* for November, 1906, describes in detail the technic of construction. In the December number of the same volume, under the caption of "The Beauman Anchored



Fig. 3



Fig. 4

Denture," it was the writer's privilege to call attention to the physiological and scientific principles involved and place on record two cases where the anchor had been used.

The one in which permanence of results was most doubtful is reproduced in Fig. 1. Since June 21, 1906, this root has done yeoman service and a recent examination finds it as firm in its socket as when the denture was introduced. The pressure being uniform on the soft tissues and anchor, instead of loosening on account of degeneration of the periosteum has kept the surrounding tissues in a healthy condition. In reply to many inquiries relative to the merits of this method of anchor, it may be added, that it has given uniform satisfaction in each of the some fifteen cases where it has been applied by the writer, using four, three or even one root with equally good results. Figure 2 represents a case where the Beauman anchor was used in an upper denture, using one cuspid and two central roots. The fact, that when these cases are heard from, it is through

acquaintances who call for similar service, is most gratifying evidence of its success.

USE OF THE BAR.

The reluctance with which patients consent to sacrifice the remaining teeth, save such as would be required for the anchor, led to some experiments in which a bar could be used without this sacrifice.

Figure 3 is a model of the first case where the bar was used. Mr. R. P., aged 80, had worn upper and lower dentures for a number of years, having but the lower third molars remaining (a strong argument in favor of the much condemned wisdom tooth) and had no inconvenience until the molar on the right was extracted. Another lower plate was made which proved unsatisfactory. When the patient came into the writer's care, the first intention was to prepare the remaining tooth for a Beauman anchor, but its location rendered this impracticable. As a last resort the tooth was prepared for a gold shell crown, to which a square iridio-



Fig. 5



Fig. 6

platinum bar was attached, as shown in the figure—the plate was made over the bar and to it was added a clasp to embrace the crown. Figure 4 shows the clasp, and on the underside of the plate the receptacle for the bar when the denture is in position. While there were some elements of doubt as to the success of this method, the results have been satisfactory. The case was finished July 10, 1907, and an examination, made while preparing models for this paper, finds the tooth in as good condition as on the above date.

Figure 5 represents a case (Dec. 1, 1907), where the first right molar was badly broken down, but which, after treatment, was crowned as in the foregoing. The intention was to retain the denture with clasps to this tooth and the first left bicuspid. However, as this was a case where the relative efficiency of the clasp and bar could be tested, a bar was attached to the cap extending distally. A wide clasp was constructed for the left bicuspid and the provision for attachment was made at a point where no spring on the clasp would be required in adjusting the denture. With the cap

and clasp in their respective positions, a plaster impression was taken, from which was made the denture. The cap was cemented to place and when the plate was introduced it was found, to my satisfaction, that the attachment to the bar was all that the most sanguine could ask; a secure fixation, and the stability of an "occlusal rest," given by what might properly be termed a *gingival support*. This attachment was in striking contrast to the clasp on the left side, which, while it holds the denture in proper position, allows it to play upon the soft tissues during mastication, which action, however slight, has already caused sensitiveness at the points of contact with the tooth. Figure 6 shows the clasp and receptacle for the bar.

Figure 7 illustrates a case where seven lower front teeth remained; a gold shell crown was made for the bicuspid, to which a bar, extending distally, was attached. For esthetic results it would have been desirable to prepare the cuspid for a Richmond crown and attach a bar to this:



Fig. 7



Fig. 8

but protests on the part of the patient against the destruction of the pulp and tooth tissue, caused it to be prepared in the same manner as the bicuspid. Fig. 8 shows the completed denture with receptacles for the bars, as shown in the preceding figure.

While shell crowns are considered unsightly, they are conceded to be the most durable in point of service and for this reason are particularly desirable for bar attachment. However, we are not handicapped by the necessity of confining the attachment to any special form of abutment. Fig. 9 represents a case where the bars are secured to a Carmichael attachment and a gold inlay, while Figure 10 illustrates another case where two open-face gold crowns are used. Notwithstanding the universal prejudice against them, those loudest in their condemnation will admit that the root of a tooth crowned in that way escapes those casualties so common where a crown, set with a pin, has been used. Granting that after a few years the crown is destroyed as a result of an open-face cap, the root

remains in as good condition as before and is as serviceable for crowning as though it had been ground down in the beginning.

Fig. 11 illustrates a case where the upper molars, a bicuspid and two incisors, were restored with a narrow denture as indicated by pencil.

TECHNIC OF CONSTRUCTION.

The success of the bar attachment depends entirely on the attention given to details, and for the time spent in looking after these, it is well to remember the aphorism of Ali Baba: "Folks who never do any more than they get paid for, never get paid for any more than they do." Supposing all useless roots and teeth have been removed and the gums to be in proper condition for a permanent denture, select the teeth or roots to which the bar is to be attached, preferably those whose axes are parallel, that the finished denture may be placed in position more readily. This



Fig. 9

precaution, while not imperative, bears the same relation in this work, as does the relative position of the abutments in bridgework.

After constructing the attachments for the bars, they are placed in their proper position, and a plaster impression taken, being careful that the attachments are placed properly in their respective positions, a model composed of equal parts of plaster and either pumice, marble dust or tenax, is made.

A square iridio platinum bar is now bent to conform to the cast extending mesially or distally, as the conditions permit. The bar is not to impinge upon the soft tissues, so rests lightly on the cast—one end coming in contact with the abutment, and held there by a drop of wax, the other end is covered with a small amount of the mixture composing the cast, and secures the bar in proper position when the wax is removed and the bar is soldered to the abutment. In those cases where there is a very close bite, the bar can be placed lingually, far enough not to interfere in the arrangement of the teeth. If the bite will permit, two bars of equal length, placed one on the other and soldered, make a deeper

receptacle in the plate and a consequent larger surface for retention. The lateral surfaces of the bars should be as near parallel as possible to prevent binding after the denture is completed; this can readily be accomplished without the use of paralleling devices, by placing the bars in such a position on the cast before soldering, that the lateral surfaces will be perpendicular to one or more imaginary planes passing horizontally through the cast, the surfaces thus taking the same direction from these planes are necessarily parallel. A copious amount of solder should be used in attaching the bar to its abutment, so as to avoid becoming detached in the subsequent part of the work. If an inlay is to be used, the bar can be more conveniently attached in the process of casting.

The abutments with the bars attached should now be polished and placed in their respective positions. A bite is taken, after which a plaster impression is made, from which a plaster model is run, when the metal



Fig. 10



Fig. 11

work will be found in the same position as when placed in the mouth. The model is set in the articulator and the case waxed up in the usual manner. After investing, cover the cast and bars with No. 40 tinfoil and pack. When vulcanized carefully remove any rubber that may have covered the under surface of the bar, when by careful manipulation, it can be easily removed from the plate.

The case is now finished, when, with the abutments in their proper positions, it is placed in the mouth, and if attention has been given to all details the adjustment cannot be other than exact. After removing all the parts the abutments are cemented to place, the surplus cement hastily removed and the denture quickly introduced and the patient instructed to hold the jaws firmly together until the cement has completely set. In removing the denture, if it is found so firmly anchored as to inconvenience the patient, this can be remedied by cautiously trimming the receptacle for the bar on the other hand, the anchorage may be made more

secure by warming the rubber on either side of the groove, and with a warm burnisher of a diameter greater than the width of the groove a little pressure will produce the desired result.

The advantages of this form of attachment are many and need no further comment than that it serves the purpose of the clasp and the principle of its construction frees it of the objections referred to elsewhere in this article.

Under certain conditions we would have a formidable force operating against the tooth, in this application of the bar.

Being a lever of the first order (see Fig. 12) the bar AB is the power arm, the fulcrum at B, the weight arm BC, and the weight or resistance at R.

With AB and BC equal, for every line A is depressed, C would move an equal distance.

With AB longer than BC, a smaller force at A would cause greater pressure at C, the gain being proportionate to the lengths of the arms.

With AB shorter than BC, there is a corresponding loss of force, but a gain in the distance the resistance is moved.

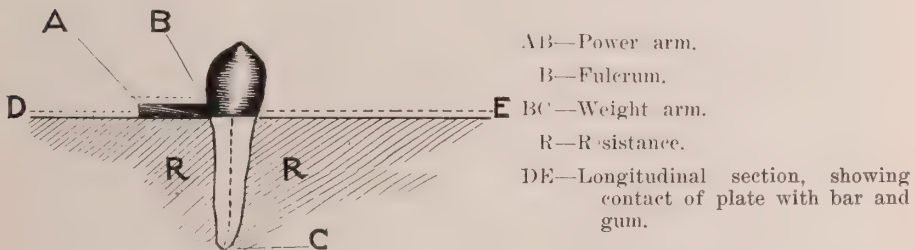


Fig. 12

With the bar, or power arm AB, resting in its receptacle, it is absolutely free from any downward pressure, other than that distributed over the entire surface covered by the denture, which is represented by the dotted line DE.

The bar is equally free from lateral pressure on account of the cleavage secured by the plate fitting into the interdental spaces, and lateral or uneven surfaces of the gums.

The downward pressure, as registered by the gnathodynamometer (Black's Operative Dentistry, 1908, Vol. I, page 161-162), may range from 25 to 275 pounds, averaging about 171 pounds, being due to the condition of the periodontal membranes rather than to muscular strength. This pressure stimulates the periodontal tissues, which, like other tissues, develop into a healthy, vigorous condition, when called upon to perform their natural function.

Fig. 13 represents the application of the bar in removable bridge work; a Richmond crown and gold shell crown, each with bar attached, are fitted to the cuspid and second molar and placed in their respective positions in the mouth. A plaster impression is taken and a model made

of plaster and marble dust. As a precaution against the parts becoming united in subsequent soldering, a small piece of inlay platinum is burnished over both, the distal and lingual surface of the Richmond, and the mesial of the molar cap, and secured in their positions by white shellac varnish. Another piece of inlay platinum, of sufficient size to cover the bars, the intermediate space on the model and the two small pieces previously placed, excepting their extreme edges, is now closely burnished over the entire surface. Over this matrix solder is flowed of sufficient quantity to give it rigidity and prevent distorting; the bars are now carefully removed, which is easily accomplished if the matrix is free from any holes that would permit the solder coming in contact with them. The abutments and matrix are now placed in their positions in the mouth and the bite taken. After another plaster impression, from which the



Fig. 13



Fig. 14

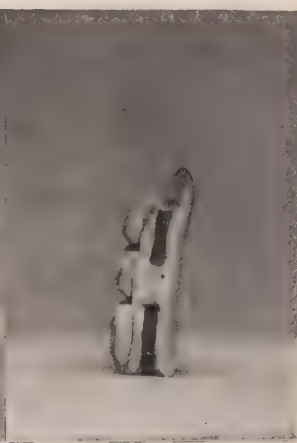


Fig. 15

bars and abutments are removed, and the *matrix alone allowed to remain*, a model of plaster and marble dust is made, as shown in Fig. 14, which is used in the subsequent steps of the work—*assembling the teeth and soldering*.

The teeth should be of sufficient length to reach to the gums, so the backings may come in close proximity to the matrix, and facilitate the firm union of the parts in the final soldering.

Fig. 15 shows the completed bridge, with the receptacles for the bars, and a rest or flange to engage the lingual surface of the cuspid.

The several parts are now fitted together, placed in the mouth, and if all the details have been looked after, adaptation will be found complete. The abutments are then cemented in their positions, all excess of cement removed, the bridge fixed firmly in place and no attempt made to remove it for several hours, giving the cement ample time to set.

In view of the evidence offered by our dental literature that many of

the recent achievements of our profession are but the fruition of ideas, conceived by our professional forefathers, it seems presumptuous to lay claim to priority, in calling attention to almost any device. The inlay, for instance, is described by Murphy of London in 1837, and the idea of a disappearing wax model was perfected before the birth of Ollendorf or Taggart. The writer, after due obeisance to whomsoever credit is due for introducing the use of the bar, takes this opportunity of calling attention to its merits.

THE NECESSITY FOR MECHANICAL RETENTION IN CAVITY PREPARATION FOR INLAYS.

By Chalmers J. Lyons, D. D. S., Jackson, Mich.

Instructor in Porcelain in the University of Michigan.

IT would almost seem, in scanning the dental literature of the past few years, and in digesting the contents of the numerous volumes on operative dentistry, that the subject of cavity preparation had been most thoroughly covered.

Since the advent of the Taggart Gold Inlay, a field in operative dentistry has been opened up that changes to a greater or lesser degree the principles of cavity preparation which the writers and authors of the past have advocated. There has probably never been anything given to the dental profession which has enabled it to make such wonderful strides towards perfection in the field of operative dentistry as has the Taggart Gold Inlay when inserted under the proper conditions. I believe, however, that there will be no procedure in the field of operative dentistry that will receive the abuse as will that of the gold inlay, and that in a comparatively short time it will take its place along with the many other processes we have for restoring lost tooth structures, and the now over enthusiastic men will again go to the dusty drawers of their cabinets and resurrect their gold pluggers which have been inactive for so long.

Porcelain underwent the same cycle of transformation until it found its real place in the realms of dentistry.

One factor that will contribute to the failure of the gold inlay is the same factor that contributed so largely to the failure and subsequent condemnation of porcelain as a filling material, and that is the failure in the comprehension of the foundation principles of cavity preparation.

The principles of retention in the preparation of cavities for inlays and for fillings are widely different. The preparation of the cavity for inlays requires more exactness in its details than that for gold or amalgam fillings.

Unless we have the foundation principles of cavity preparation for the inlay firmly grounded, and recognize the wide contrast between the

preparation of the cavity for an inlay and that for a filling, we can not hope to accomplish the highest degree of success in the manipulation and retention of the inlay, be it gold or porcelain.

Some writers and operators of a few years ago advocated the retention of the porcelain inlay by means of close adaptation of the inlay to the cavity wall and a thin film of cement. This method for cavities existing where no stress is exerted on the inlay during the process of mastication, such as in the cervical or buccal cavities, is well and good, provided the inlay and cavity be grooved before setting the inlay, but for cavities on the occluso-proximal or incisio-proximal surfaces of a tooth, the writer believes that not only close adaptation and frictional retention is necessary, but in addition there must be mechanical retention if the inlay is expected to take its place with the permanent filling materials.



Fig. 1



Fig. 2

INLAYS REQUIRING MECHANICAL RETENTION.

As the subject of this article is The Necessity for Mechanical Retention in Cavity Preparation for Inlays, the only cases that will be treated will be those large cavities where the inlay is positively indicated and where they can be only permanently retained by mechanical retention, that is, grooves and angles should be formed in the cavity, that the inlay when completed will be so shaped that it will, in a measure, be self-locking in the cavity.

The first thing that the operator must consider in beginning the preparation of a cavity for an inlay is sufficient space to enable him to withdraw the wax impression if it be for a gold inlay, or the gold or platinum matrix if it be for a porcelain inlay, without distorting the same.

This space may be obtained in any one of the many ways for separating teeth, by crowding absorbent cotton or gutta percha into the cavity, by crowding cotton tape between the teeth and leaving for two or three days previous to the operation, or by use of one of the many separators for that purpose, but space must be obtained if the inlay is to be the best.

INCISO-PROXIMAL CAVITY.

The first case that will be taken up will be that of an inciso-proximal cavity. In these large cavities difficult problems are often met with in the possibilities of retention.

On the disto-proximal surface of a cuspid the writer advocates the gold inlay instead of the porcelain; however, the cavity formation is practically the same.

In cavities of this type, where the pulp is involved, as in Fig. 1, an iridio-platinum post should be used, gauge 16 or 18. This should extend into the root far enough to give ample retention to the inlay, for in cavities such as these the post is to be the chief means of mechanical retention. The labial and lingual walls of the cavity should converge slightly toward the incisal edge and each should form an obtuse angle with the pulpal wall. The gingival wall should extend to the margin of the gum and the middle



Fig. 3



Fig. 4

portion. Fig. 1 (a) should form an acute angle with the pulpal wall. The pulpal wall should be flat or slightly convex.

In large inciso-proximal cavities where the nerve pulp is not involved, the writer has found the cavity preparation advocated by Dr. John Q. Byram very practical, where a step extends from the incisal edge to the gingival wall on the lingual surface. Fig. 2. This step is easily executed by means of small stones and right angle fissure burs.

The labial wall of the cavity should form a right angle with the pulpal wall and the gingival wall an acute angle with the pulpal wall. The step in the lingual surface should be on the same plane as the lingual surface of the tooth, and deep enough so that in the use of porcelain it will have sufficient body to impart the required strength.

A shallow groove should extend from the gingival wall to the incisal edge at the junction of the pulpal and axial walls. Fig. 2 (a). This is the mechanical retention of the inlay for this cavity.

This form of cavity preparation is more applicable to porcelain inlays than to gold. In these large inciso-proximal cavities where the gold inlay is indicated, the preparation shown in Fig. 3 is a desirable one, especially so in cases of mechanical abrasion.

PREPARATION FOR GOLD INLAYS.

This form of cavity preparation is not a desirable one for porcelain on account of the friable nature of this material, the weak point in the inlay being at (a) where the porcelain would have a tendency to fracture when subjected to stress, so it should be used only for the gold inlay.

The labial and gingival walls of the cavity should be formed the same as the preceding formation. The lingual wall should form an obtuse angle with the pulpal wall. The pulpal wall should be slightly convex. A lingual step is formed on the incisal third with its axial walls diverging toward the approximal and the floor of the step diverging slightly toward the cervical. A hole should be drilled running parallel with the cavity at the junction

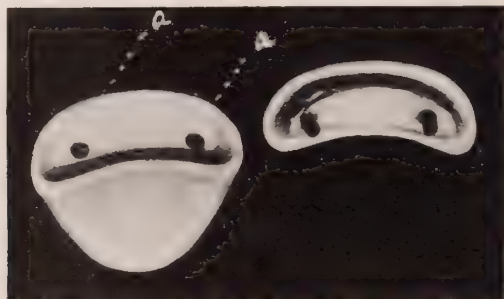


Fig. 5

of the axial and pulpal wall, Fig. 3 (b), and an iridio-platinum post, gauge 18, should be inserted to be withdrawn with the wax model and invested so as to become part of the gold inlay when completed. Fig. 3 (c).

The lingual step in this cavity will not permit the dislodgment of the inlay when the stress is upward and outward and the iridio-platinum post will resist the lateral stress. In other words, the inlay is practically locked into the cavity.

CASES WHERE THE PROXIMO-INCISAL PORTION HAS BEEN LOST.

Fig. 4 shows a form of cavity preparation applicable in cases where the proximo-incisal portion of the tooth has been lost by fracture or where there is a large amount of dentine remaining when the tooth structure has been lost through ravages of decay. This preparation is one advocated and used by Dr. C. H. Worboys. It consists in cutting away the labial and lingual enamel plates, leaving a ledge of dentine, Fig. 4 (a). The labial and lingual walls should form right angles with the plane of the surface of the tooth. The gingival wall should form an acute angle with the pulpal wall.

A groove should be cut in the incisal portion of the ledge of the dentine near the axial wall of the cavity. Fig 4 (b). This form of cavity preparation is applicable to either the gold or porcelain inlay. The groove in the dentine prevents the inlay from becoming dislodged when subjected to lateral stress and the ledge of the dentine itself protects the inlay from dislodgment when the stress is applied upward and outward.

CASES INVOLVING THE ENTIRE INCISAL EDGE.

In cavities involving the entire incisal edge, it is sometimes a difficult problem to know just how the inlay can best be retained.

When the pulp is not involved the preparation shown in Fig. 5 is a practical one and one which is not necessary to sacrifice an undue amount of tooth substance in its preparation.

The dentist is more frequently called upon to restore the incisal edge from loss of tooth substance by fracture than by caries and usually when a case presents, an irregular surface in both the dentine and enamel is found.



Fig. 6

This surface should be ground until the plates of enamel present a well defined and smooth line.

A cavity should then be formed in the dentine for a seat for the inlay, care being taken to leave the enamel walls well supported by dentine. The labial, lingual and lateral walls of the cavity should diverge toward the incisal edge and the pulpal wall should be slightly convex. Two parallel holes, Fig. 5 (a) should be drilled toward the root, and iridio platinum or platinum pins, gauge 18 or 20, inserted. If porcelain is used for the inlay, the pins should be inserted after the matrix has been formed and porcelain body packed around the pins while in the cavity, and the pins withdrawn with the matrix and the porcelain fused to a high biscuit, after which the matrix should be carried to the cavity and reburnished.

If gold is used for the inlay, the pins should be withdrawn with the wax model and invested, that they may become a part of the inlay when completed.

CASES WHERE DEVITALIZATION IS INDICATED.

In many of these cases the shock to the nerve pulp caused by the fracture of the tooth will be so great that devitalization will be indicated. In those cases the cavity should be formed in the same manner, and instead of two lateral pins a post, gauge 16 or 18, may be used, running well up into the root canal and attached to the gold or porcelain in the same manner as the lateral pins.

CASES OF PITTED ENAMEL.

Cases of malformation of the enamel in the incisors and cuspids, where we find the enamel pits, can be treated successfully by the use of porcelain in the manner as shown in Fig. 6.

The enamel is all removed from the incisal third, leaving the dentine Fig. 6 (a), care being taken to remove enough of the dentine so as to give sufficient bulk to the porcelain, to insure adequate strength to resist the



Fig. 7

stress that may be applied during the process of mastication. The enamel walls should form a right angle to the plane of the surface of the tooth. The walls of the dentine should converge toward the incisal. All undercuts in the dentine must be obliterated so as to insure the withdrawal of the matrix.

The writer has found that the matrix material shaped in the form of a cone and soldered, with the base of the cone the same circumference as that of the enamel of the tooth above the cavity, is the easiest to manipulate in these cases.

INLAYS FOR BICUSPIDS AND MOLARS.

In bicuspid and molars experience has proven that porcelain is rarely indicated in large occlusal or approximal cavities, on account of its being so friable that it does not have sufficient edge strength to withstand the stress that is required of fillings in these teeth.

Fig. 7 shows a form of cavity preparation for a gold inlay, although porcelain might be used if it was necessary for cosmetic effect.

The gingival wall should be flat and should extend to the free margin of the gum, and it should be at right angles with the pulpal wall. The buccal and lingual walls should form obtuse angles with the pulpal wall, and slightly diverge toward the occlusal surface. The axial wall should converge toward the flat seat of the step which is at right angles with the pulpal wall. A groove for retentive resistance should be made at the junction of the axial wall and the seat of the step. Fig. 7 (a).

If porcelain is used the step should be deep enough to insure adequate strength.

Another form of cavity preparation for bicusps and molars is seen in Fig. 8.

The general form of the cavity should be the same as that seen in Fig. 7, with the buccal and lingual walls diverging toward the proximal and also occlusal surfaces. The gingival wall should be flat and should form a right angle with the pulpal wall. The pulpal wall of the step should be



Fig. 8



Fig. 9

slightly convex and the step should extend far enough to cut out all decayed fissures and should not terminate in the fissures. Fig 8 (a).

All of the terminations should be well rounded and in no portion of the cavity should distinct angles be allowed to remain.

A heavy groove in the labial and the lingual walls should be made to insure retentive resistance. Fig. 8 (b).

EXTENSIVE OCCLUSO-PROXIMAL CAVITIES.

Fig. 9 shows an extensive occluso-proximal cavity. This represents a class of cavities which can be restored to normal conditions by means of the gold inlay perhaps better than by means of any other operation.

The preparation consists in the cutting out of all fissures and forming a step with cement, Fig. 9 (a). The gingival wall should be flat and form a right angle with the pulpal wall. The buccal and lingual walls should diverge toward the approximal and occlusal surfaces. The buccal groove, Fig. 9 (b), should be cut out to the termination of the fissure and the

lateral walls of the groove should diverge toward the occlusal surface. Fig. 9 (a). The mesial or distal lingual groove should be cut out and well rounded with lateral walls diverging toward the occlusal surface. Fig. 9 (d). The pulpal wall of the step should be slightly convex.

CASES OF MECHANICAL ABRASION, OR WHERE NECESSARY TO OPEN THE BITE.

In cases of mechanical abrasion or where it becomes necessary to open the bite, the form of cavity preparation shown in Fig. 10 is practical. It consists in grinding the enamel walls of the occlusal surface until they present a sharp, well defined line. A cavity is then cut for seating the inlay as deep as the pulp will permit, leaving the enamel walls well supported by dentine, the walls all diverging toward the occlusal.

Four parallel holes should be drilled, Fig. 10 (a), to receive the platinum pins, gauge 20. These should be inserted and removed with the wax impression for the inlay, and should be invested and the gold cast on them that they may become a part of the inlay when completed.

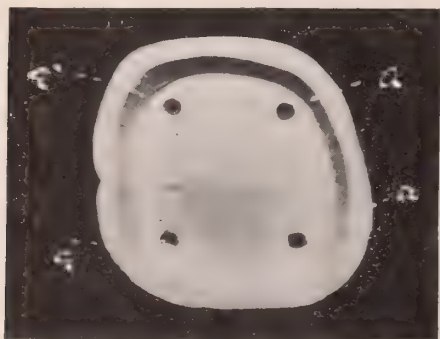


Fig. 10



Fig. 11

On account of the strain that is applied to bicuspid and molars during the process of mastication, the porcelain will not have sufficient strength to withstand the stress on account of not being able to secure a bulk of this material in these cases, consequently gold only should be used.

This form of cavity preparation is applicable to bicuspid as well as molars, but in the bicuspid three pins only are necessary, two in the buccal and one in the lingual.

LINGUAL CUSP RESTORATION.

Cases are frequently presented with large mesio- or disto-approximal cavities in bicuspid where it is best, on account of lack of tooth substance, to restore the lingual cusp as well as the mesial and distal cavities by means of an inlay. Fig. 11 shows a form of cavity preparation for these cases.

When such extensive cavities are presented it is usually necessary to devitalize the pulp and then a cement capping should be built in to form the pulpal wall. The occlusal surface on the lingual portion of the tooth should be ground until solid dentine is reached and a well defined enamel border

is secured. The gingival walls should be flat and should form a right angle with the pulpal wall.

The buccal and lingual walls should diverge toward the occlusal, and these walls should form obtuse angles with the pulpal wall. The pulpal walls should converge toward the occlusal with a flat seat on top, Fig. 11 (a).

Every cavity that will be presented will have some peculiarity of its own, but there are certain principles in cavity preparation for inlays that must be followed out. The preparation of many cavities for inlays requires the sacrifice of sound tooth structure in order to secure the retentive resistance that is necessary for a permanent operation.

ESSENTIAL REQUIREMENTS IN CAVITY PREPARATION.

A few of the essential requirements in cavity preparation in inlay work may be given as follows:

First, Sufficient working space must be secured before beginning the operation.

Second, The force and direction of occlusion must be taken into consideration before beginning the preparation of the cavity, then by grooves and angles secure all the mechanical retention that is necessary without forming undercuts.

Third, The walls of the cavity should slightly diverge toward the margins.

Fourth, The cavity should be as deep as the condition will permit with the pulpal wall parallel to the plane of the surface on which the cavity is located.

Fifth, All undercuts must be obliterated so as to be able to withdraw the matrix if it be for porcelain inlay, or the wax model if it be for a gold inlay, without distorting the same.

Sixth, Frictional retention must be secured by making the pulpal wall as extensive as possible without forming undercuts.

If these essential laws are not carried out, nothing can be expected except failure. Not a single one of these principles can be overlooked if the highest ideal in inlay work is to be obtained.

BETTER to stem with heart and hand
 The roaring tide of life, than lie,
 Unmindful, on the flowery strand
 Of God's occasions drifting by!
 Better with naked nerve to bear
 The needles of this goading air,
 Than in the lap of sensual ease forego
 The godlike power to do, the godlike power
 to know, —Whittier,

ARTICULATED PORCELAIN CROWN AND ABUTMENTS

By F. W. Howlett, D. D. S., Jackson, Michigan

WHEN I first began to fuse porcelain body and use it for molar crowns, I realized that, no matter how well the crown was carved, and how well it looked when completed, it was far from perfect, inasmuch as it did not articulate accurately. This was my chief objection to the crown, for its appearance was nearer perfect than anything we had had, and there was no doubt about its strength.

To overcome this objection and to make a crown of porcelain that would be the equal of our modern crown of gold, was a result which I hoped to accomplish. In restoring a badly decayed molar in January, 1908, it became necessary for me to do something to establish that end with which I, at least, was not familiar. Since that time I have perfected a step in the advancement of porcelain, by manipulating it so that it can be absolutely articulated.

I was interested in reading in the Dental Cosmos of May, 1908, a discussion by Dr. J. H. Meyer of New York, before the First District Dental Society, in which he says: "I have made and baked porcelain for over forty years, and I know of no exact method of securing an accurate occlusion with fused porcelain, except by grinding after completing the bake. It is almost impossible to build up and carve an occlusal surface in porcelain, so that after the shrinkage in baking, it will be absolute in occlusion. A perfect baking cannot be done before articulation; it must be done afterwards."

We have been articulating porcelain by grinding, building up, re-grinding and rebuilding, but when the piece was completed, we had only an approximate articulation and were far from satisfied with the result.

So gratifying were my results of articulating porcelain, that I gave it as a clinic at the Michigan State meeting, and it was also given at the Indiana State meeting, in June, 1908. At the request of some of our prominent porcelain workers, I am giving a detailed description of this method.

By the method which I will describe, absolute accuracy can be obtained, and the porcelain crown, when so constructed, has all the advantages of the articulated gold crown, plus the esthetic advantage of the porcelain. Unless the bite is very short, I believe the crown is indicated in every case where we can get compensation for our efforts.

Criticisms have been made in regard to the time necessary to construct such a crown, but it can be made as quickly as a jacket crown and the finished piece is as far superior to the jacket crown, as an articulated gold crown is to the old swaged one of gold.

Articulated porcelain is especially indicated for molars and bridge-work, but can be used nicely for bicuspid and on any porcelain crown, if the porcelain of the same is thoroughly understood.

The crown to be constructed is made entirely of porcelain bodies, and I prefer to use the Consolidated body, as it is necessary to use two matrices and the porcelain body is not liable to be over fused in either.

PREPARATION OF TOOTH AND CONSTRUCTION OF ABUTMENT.

First: The tooth to be crowned should be ground to the cervical line or slightly below, and if caries has taken place below the cervical, as is generally the case, remove to healthy dentine, obtain mechanical anchorage, or enlarge the canals for dowels.



Fig. 1

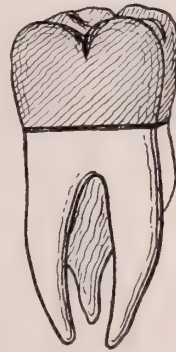


Fig. 2

The tooth being prepared, the next step is the construction of the abutment. It makes no difference whether a natural tooth is used for an abutment or whether the abutment is cast. I do not believe, however, in building up an abutment or part of an abutment with amalgam. Amalgam as an abutment for porcelain comes far from giving positive results, and I believe many men will agree with me when they recall their experiences in using amalgam under jacket crowns.

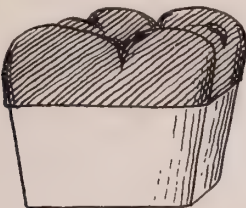


Fig. 3

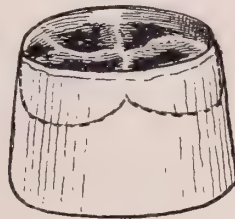


Fig. 4

I prefer a cast abutment, as the crown can be completed outside of the mouth. This I consider one of its chief advantages, as one can work much faster and have positive results. If the abutment is cast entirely and gold used, I prefer platinous gold, as it is much stronger than pure gold and the dowels are not so liable to bend. If iridio-platinum is used for dowels and a little gold is flowed over it before casting, you will find the gold perfectly cast to the dowels.

Acolite makes a very sharp cast, and while I cannot say that it does not oxidize in the mouth, it has not in the few cases that I have used it.

If the tooth is badly decayed, and access is obtainable, I enlarge the canals for a short distance, say 1-4 of an inch, and burnish pure gold over the tooth, allowing it to puncture as it will, making a very slight band by burnishing it over. Using Klew's wax, I press it over the gold, forcing it into the enlarged canals. The gold acts as a matrix and facilitates the removal of the wax, and as a result I have dowels which are short, but which absolutely fit.

MODEL AND MATRIX.

Carve the wax as shown in Figure 1. When the abutment is cast, place it in position and soften Stent's compound, (which is a material made in England and is extremely hard, thus making it possible to swage the matrix directly on it), and let the patient bite to get absolute articulation. Chill, and carve as you wish the finished crown to be, as in Figure 2. Any model that can be carved in Stent's compound can be reproduced in porcelain by this method. Put the model on the floor of any good

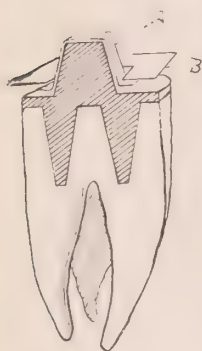


Fig. 6



Fig. 5

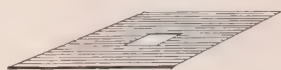


Fig. 7

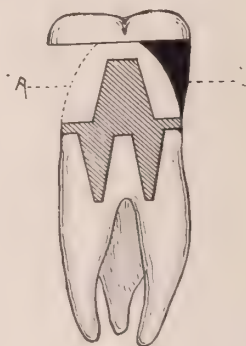


Fig. 8

swager and swage inlay platinum to it, letting it extend about one-third of the length. (Figure 3). This gives an outside matrix as I will call it. While it is not necessary, I sometimes invest the matrix directly to the model with an investment material, which will stand up in the fusing of Consolidated body. This eliminates any possibility of distorting the matrix and prevents the porcelain body from pulling it in while fusing. (Figure 4.)

FUSING THE PORCELAIN.

Remove, and fuse porcelain body on the inside of the matrix, remembering that it is the reverse of an inlay, i. e., instead of building out to the articulating surface, you are building the articulating surface first. So if you are using "E" for your general effect, a little of it should be used first and fused. Place your blue in the cusps, and fuse your "J" or what ever yellow you wish next, remembering that much porcelain body

will distort the matrix, consequently the center must be fused first. In order to prevent warpage of the matrix, I prefer a number of bakings for the cusps, instead of using a varnish, for the porcelain body will not stand contamination and the slightest here will show in the finished piece. Bring last fusing to a high biscuit and remove the matrix, (Figure 5). If it is fused, the matrix will be much harder to remove.

A MODEL FOR THE ABUTMENT AND MAKING THE CROWN.

By wrapping moist blotting paper around the abutment, and holding it wrong side up, a low fusing metal, which melts in boiling water, can be poured into it. This gives in a minute a model for the abutment, which can be handled without danger of being disturbed in any way. Place the model and abutment in dentalae and with swager, swage inlay platinum to the post by bending a piece around it, first with the fingers, letting it extend about 1-16 of an inch on the floor of the abutment (Figure 6-A). Now take a piece of platinum a little larger than the base of the abutment and cut a hole in the center to correspond with the top of the post, (Figure 7), swaging it over the post, (Figure 6-B).

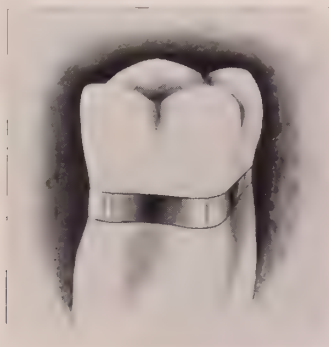


Fig. 9

By placing a little porcelain body at the joint, the matrix can be removed easily, as the platinum over the post will remove the platinum swaged over the base and the two pieces will not have to be soldered. By this method all burnishing is eliminated, and I defy anyone to burnish a matrix in half the time or half as well. Fuse porcelain body over the post and the base, leaving the margins clear for a final burnishing and fusing, (Figure 8-A). Place the matrix on the abutment in the mouth and with casting wax (Figure 8-B) hold the cusps in position allowing the patient to bite. If too high, it will be necessary to grind the porcelain from the post and vice versa to build it higher if needed, for the cusps must rest in one place on the bulbous portion of the crown, otherwise the cusps will become distorted in the fusing. If it has been necessary to do any grinding, be sure that the parts have been thoroughly cleansed,

by brushing conscientiously with alcohol or with soap and water before assembling. Tack with porcelain body and fuse. The inlay wax will be found to have been burnt out without any residue. The crown is then placed in position and if correct, is ready to be finished in the ordinary way, but remember to give the margins a final burnishing before the last fusing.

Remove the matrix and roughen the post by notching the corners and cement to place, (Figure 9).

The Davis molar crown can be used very nicely in connection with articulated porcelain by grinding same to the approximate fit of the root to be crowned, and using it as a tray to force the wax into the roots for the abutment. Cast the abutment and grind off the cusps and the porcelain to about the shape of the post. By this method one matrix is eliminated and the color of the cusps can be matched without a joint showing,

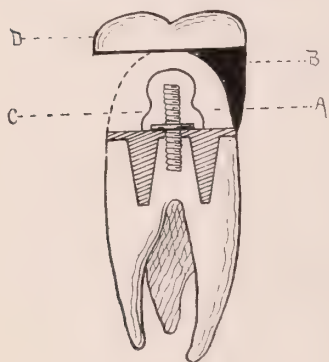


Fig. 10

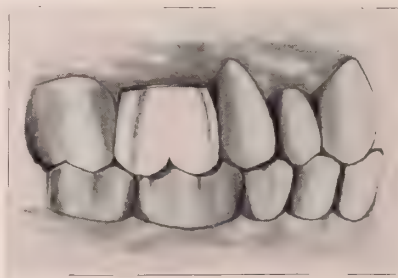


Fig. 11

as probably would be the case were the crown ground square with the top of the abutment.

Figure 10 shows the porcelain of a Davis molar crown ground as designated by "a" and the wax "b", holding the articulated cusps "d" to it; "c" shows the Davis pin.

For articulated porcelain in connection with bridge work, the Davis crown should always be used, as the porcelain is all that is desired and it is necessary to make only one matrix.

An abutment which fits the process is easily cast direct to the model, and the cusps articulated by the same method as given above, excepting that it is articulated by taking the bite from the model, instead of in the mouth.

Figure 11 shows the articulated crown in position.

"ALVEOLITIS"—THE DISEASE OF WHICH PYORRHOEA ALVEOLARIS IS ONE STAGE*

By M. H. Fletcher, D. D. S., M. D., M. S., Cincinnati, Ohio

IN presenting this subject it is desired to view it from the standpoint of those who believe the affections of the alveolar process to be primarily a bone disease. The writer would class so-called pyorrhoea alveolaris with other well known infectious surgical diseases of bone, since its symptoms, progress, pathology and termination, as well as its systemic features, seem to be identical with diseases of bone in other parts of the body, and not primarily a disease of the periosteum, periodontal membrane and gums as regarded by many.

Its variation from diseases of other bones is due to gross anatomy and environment.

If considered from this standpoint and operated upon as a bone disease, the writer finds the treatment much simplified, and shortened, and the number of complete recoveries greatly increased. It is due to this treatment that the extreme ravages of the disease have been discovered.

Miller says: (In his "Micro-organisms of the Human Mouth," Page 323,) "By many the bone is regarded as the seat of primary infection." He quotes Newland Pedley, who claims it is essentially of constitutional origin. Pedley says: "The weight of evidence tends to place pyorrhoea alveolaris in the category of bone diseases. The exposed position of the alveolar margin, and its intimate relation with organs of such feeble vascularity as the teeth, go far to explain why it is this portion of the alveolus that is first affected, and also the usual arrest of the disease by the removal of the teeth." Miller also quotes Witzel and Magitot as follows: (Page 324,) "According to Witzel, pyorrhoea alveolaris is a 'marginal necrosis of the alveolus, caused by a septic irritation of the bone-marrow,' a view which Arkovy seems to share, since he terms the disease 'caries alveolaris specifica.' He regards the alveolar margin as the seat of the primary disturbance. 'The nature of the disease is a suppurative inflammation, which spreads to all parts lying between the gums and the dentine of the root.'"

"Magitot, referring to the studies of Malassez and Galippe, does not doubt the parasitical nature of the disease; he concludes his remarks with the following propositions: 'The affection characterized by alveolar supuration and by the loosening and falling out of the teeth should be designated as a true symptomatic alveolar arthritis, septic and contagious.'"

Under his "Original Investigations Concerning Pyorrhoea Alveolaris," Miller says: (Page 332,) "As regards the participation of bacteria in pyorrhoea alveolaris, our present knowledge of suppurative inflammation

* Read before the Semi-Centennial Jubilee Meeting of the Indiana State Dental Association, Indianapolis, Ind., June, 1908.

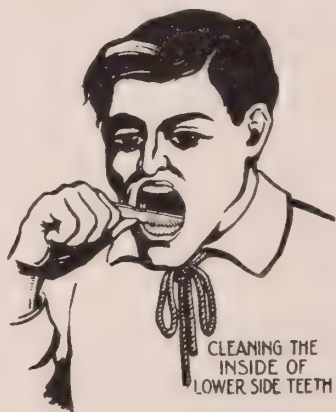
A SYSTEM OF SCRUBBING THE TEETH.

By Dr. M. H. Fletcher, Cincinnati, Ohio.

(COPYRIGHTED)



Move the brush up and down—not rotate.
Push against back of brush
with tongue.



Move the brush backwards and forwards
—not rotate. Push against back of
brush with tongue.



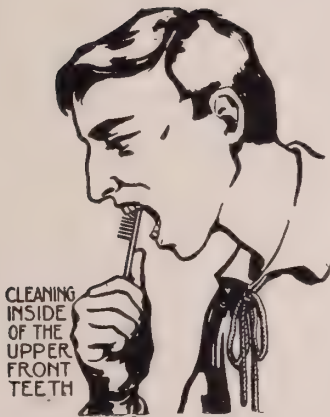
Move the brush from side to side—not
rotate.



Move the brush backwards and forwards
—not rotate.

Fig. 1.—A system of scrubbing the teeth, for removing and preventing calcareous deposits and developing connective tissue in the gums, which makes them more resistant to disease. The scrubbing should be done with a straight brush on rising and retiring.

See illustrations of brush on opposite page.



Move the brush up and down—not rotate.
Push against back of brush
with tongue.



Move the brush backwards and forwards
—not rotate. Push against back of
brush with tongue.



Move the brush from side to side—not
rotate.



compels us to consider the former as the cause of the suppurations incident to this disease. Micro-organisms which possess pyogenic properties temporarily or permanently inhabit every mouth. If, therefore, the power of resistance of the periodontal tissue be impaired by any one of the above-mentioned local or constitutional causes in such a manner as to furnish a suitable culture medium for the bacteria, they will, of course, begin their ravages, and the usual symptoms will follow."

It seems to be a law that certain micro-organisms, finding lodgment in various bones of the body, produce certain phenomena or diseases. It would seem a reasonable hypothesis to assume that these certain micro-organisms, finding lodgment in the jaw bones or alveolar process, would produce the same results that they do in other bones. It would also seem rational to assume that these certain phenomena or diseases found in the jaws are produced by like causes and are amenable to like treatment, and one object of this paper is to try to induce others to help prove or disprove the reasonableness of this theory.



Fig. 2.—First lower molar lost from alveolitis. Second is beyond recovery. Third has recovered.

NOMENCLATURE.

The names by which the disease is and has been known are serving their purpose, but for simplicity and clearness the usage in other branches of surgery and medicine will be adopted. That is, the name of the organ or part involved will form the foundation or generic name, the nature of the disease being indicated by a suffix, and the stage or condition by a descriptive adjective. For example: The ending "itis" indicates inflammation. Conjunctivitis, inflammation of the conjunctiva or pleuritis, inflammation of the pleura, may pass through the acute, chronic and suppurative stages. Under the name "gingivitis," inflammation of the gums follows the same rule. Osteomyelitis has its acute, chronic, suppurative and necrotic stages.

The alveolar process being the part primarily involved in the disease under special discussion, the term "alveolitis" will be used in this paper in the sense above indicated, and the different stages of the disease distinguished as acute, chronic, suppurative and necrotic alveolitis. The adjectives "tuberculous," "syphilitic," "pyemic," etc., are also usable

under this plan, and each ascribes a definite pathologic characteristic to the disease whose name it modifies.

Riggs' disease is a better term than pyorrhea alveolaris, since the latter name describes only the suppurative stage, and does not permit of use to describe other stages without producing a paradox or a contradiction. Such terms as "Bright's disease" and "Graves' disease" are, however, being eliminated from general medicine, and purely descriptive terms, formed on the principles indicated above, are being substituted in their stead.

The term "interstitial gingivitis" is subject to the criticism that it implies that the soft tissues are the ones primarily involved by the inflammation, whereas in this disease the bone seems to control the health or disease of the soft tissues overlying it. For instance, no amount of treatment of the gums, pure and simple, will induce their healing in this disease if there be any considerable disease of the underlying bone, whereas proper treatment of the disease of the bone induces prompt recovery from the

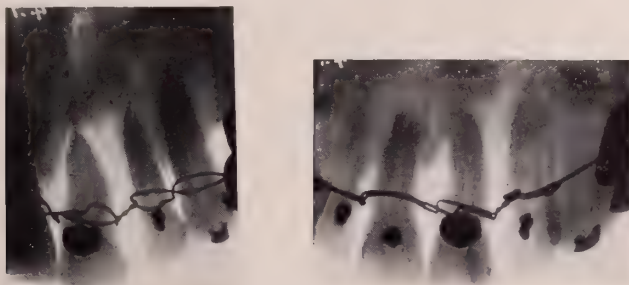


Fig. 3, AB.—Superior incisors and canine after curetting. With wire splints to sustain them until recovery.

gingivitis. It would seem to me equally reasonable to use the term "interstitial coritis" to describe inflamed skin over the seat of an osteomyelitis or caries of bone. Subsequent to the initial lesion in alveolitis, the gums seem to have little more to do with the disease than the skin does in cases of underlying bone disease.

ANATOMY.

The structures to be dealt with are almost wholly mesoblastic, that is, of the connective tissue type.

The periodontal membrane, the periosteum and endosteum, as well as pericementum and dentine, are like bone, mesoblastic in their origin, and succumb to like enemies, whether these be bacteria, osteoclasts or chemical agents. The enamel and mucous membrane are epiblastic, and yield more readily to enemies different from those of the mesoblastic tissues; consequently, they are involved only secondarily in this disease.

The minute anatomy of the alveolar process and maxillae is identical with that of other bones, and naturally these tissues would be subject to the same diseases.

PATHOLOGY.

Alveolitis in its progress includes all the processes known to other surgical diseases of bone, viz., acute, chronic, suppurative and necrotic stages. In my opinion, the initial, exciting cause, in at least nine-tenths of the cases, is the formation of calcareous deposits about the necks of the teeth. The tartar being adherent, Nature can not remove it, and the inflammation becomes more extended and violent, resulting in raw tissue and open blood vessels at the point of contact with the tartar; this naturally results in the formation of pus, in small quantities at first. The surrounding of a foreign body by pus or the floating of a foreign body in pus, until the surface is reached and an opening made for its discharge, is a familiar process in the case of a thorn or splinter in the flesh.

Tartar against the gum margin is a foreign body, and Nature endeavors to dispose of it just as she would the splinter. The tartar, being fixed, only continues the irritation, with pus as a continual result. The thin edges of the alveolar process, being continually attacked by pus or osteoclasts, soon begin to melt away, and the membranes covering the bone and roots of the teeth disappear with it. So long as the irritation remains, this process continues, its rapidity varying with environment and individual. Thus it is seen that Nature in this particular malady, if unassisted, in her attack on her enemy, the calcareous deposits, destroys the tissue about teeth until the tooth with its attached tartar is extruded, thus finally accomplishing what she started to do (Fig. 2).

The acute or incipient stage of alveolitis may continue for a lifetime, with no appreciable inconvenience or pain to the patient, the progress often being so slow that there is nothing to reveal the presence of the disease aside from the receding of the tissue about the necks and roots of the teeth. But infection may take place about one or more teeth at any time, producing periostitis, either inside or outside of the socket, proceeding from one stage to another, ending in necrosis either of limited or extended degree.

ETIOLOGY.

Abundant evidence can be presented to maintain the position that, without local irritation, destructive diseases of the soft and hard tissues about the teeth and alveolar process would be confined to those due to traumatisms thrombosis, nutritional changes and bacterial stomatitis, with now and then an infection from the circulation, as in other tissues; but these affections would then be attributed to their special causes and treated accordingly.

The most frequent point of attack for alveolitis is in the septums between the teeth, where tartar is not disturbed by lips, tongue, food or brush; but any place about the necks of the teeth, where tartar is undisturbed, is apt to be the point of attack (Fig. 3).

The opportunity for the entrance of infection to the alveolar process is almost unlimited, for calcareous deposits about the necks of the teeth are found in every adult human mouth and in the mouths of most children.

The quantity of tartar and the irritability of the soft tissues in its presence varies in different individuals, and with each individual according to his power at different times to resist disease after its onset.

Autointoxication or lack of resisting power, however caused, makes one more susceptible to other diseases as well as to this; but a low state of health could hardly be the sole cause of an infectious disease. The microbes of infection are ever present in great abundance, Miller having isolated more than one hundred different kinds of bacteria from the juices and deposits in the mouth. So, when the gums and periosteal membrane are sore and bleeding from the impingement of tartar, bands, the wedging of food, or any other irritant, infection may readily start and the disease follow. Lesions of the gums about the teeth are so universal that the wonder is, not that there are so many diseased mouths, but that there are not more.

Low resisting power, then, not only makes one more susceptible to disease, but fosters it and permits its ravages to be more extended.

A lesion of the gums, because of immediate proximity to the bone, seems pre-eminently a suitable place for the beginning of any of the surgical infections of bone. The infections to be considered in alveolitis are those that produce osteomyelitis, caries or tuberculosis of bone, gummata or syphilitic lesions, and actinomycosis. The ultimate result in each one of these infections is dead bone.

Necrosis from lead, mercury, phosphorus and all other chemical causes, are not to be considered here, since their etiology is apparent.

Rickets is a disease of infancy in which the bones do not properly harden, and is hardly a factor in alveolitis. Osteomalacia is usually an accompaniment of too frequent childbirth; it is a general softening of the bones, especially in some locality like the hips or legs. It may attack any of the bones, but, like rickets, it seems due to a lack of the proper quantity of lime salts in bone, and not to the work of infectious bacteria. Acromegaly or hypertrophy is excluded, as well as all new growths, since alveolitis in all its stages is a destructive, tearing-down disease, and has none of the excessive building-up tendencies which produce new growths.

The diagnosis, then, in any single case, lies between an infection by pus-producing germs, such as accompany osteomyelitis; tuberculous germs, which produce caries; syphilitic germs, which produce gummata; and actinomycosis. The last named produces "lumpy jaw" in cattle, and is

not frequent in man, especially in this country. It is not uncommon, however, in countries where camels are used as domestic animals, and is confined largely to these countries. It is sometimes seen in cattle in the United States, and now and then in man in cattle districts; but in this paper it hardly need be considered in the light of a factor in alveolitis.

Then, in consideration of the above, we have three kinds of bacteria to consider as the most probable sources of infection, namely, pyogenic, tuberculous and syphilitic.

SYPHILIS.

The consensus of opinion seems to be that syphilitic infections are far less numerous than either pyogenic or tubercular infections. In my opinion this is especially true in regard to the alveolar process although the mouth seems particularly favorable to other lesions of syphilis. In patients who seem to be syphilitic, recovery is much slower, the infected tissue being more sensitive, and persisting in showing inflammation long after other patients with other infections have recovered. The characteristic thickening of the periosteum in the gummata of syphilis can be felt over the diseased bone in the neighborhood of the apices of the teeth, either on the buccal surface or inner surface, or both. Gummata in the periosteum must be distinguished from hardened lumps at the apex of dead teeth or exostosis of bone. Gummata usually appear, however, on the septum of bone between the roots rather than over them. This is because syphilitic bone is more apt to be in the cancellous portion of the body or between the roots. These conditions are rare, however, in comparison with pyogenic and tuberculous infection. Local treatment is practically the same in all infections, excepting that it must be continued longer in syphilis. Syphilitic infection may be either congenital or acquired. The congenital form appears more frequently in the bones of children, and particularly in the long bones, but the acquired form frequently shows in the bones of the head and face, the alveolar process and maxillae being no exception. With our present incomplete knowledge, however, syphilitic alveolitis is not easy to distinguish from tuberculous alveolitis.

OSTEOMYELITIS.

In considering osteomyelitis, which is pyogenic, it is to be remembered that in a typical case the seat of trouble is in the marrow of one of the long bones, oftenest the thigh bone of a child or youth, although it may occur in the periosteum, in the form of a felon, for instance. It is considered that the infection comes from the blood and oftenest finds a lesion or point of least resistance in the marrow of some bone and begins its work there. The bony walls being unyielding, the patient's suffering is intense, and the spread of the infection to the surrounding marrow and bone is rapid. The destruction and pain continue to increase as long as there is no exit for the pus and other products of inflammation. Early interference by the surgeon is demanded here, for if time must elapse for the

pus to burrow its way to the surface through bone and flesh, many days, at least, and probably many weeks must pass, during which time much tissue is destroyed and untold suffering endured.

The above description, if somewhat modified, applies to an abscess at the apex of some dead tooth, or an infection under the gum tissues, either from the blood or by infection from a lesion at the alveolar border. Very acute and painful infections about the alveolar process imply that the pus is confined at some depth below the margin of the gums. If the infection were nearer the gum margin, either in the socket or on the alveolar process, the discharge would either not be confined or would make its exit at an early stage of the disease, giving comparatively little pain in either case. The infection remaining, however, continues its destructive work, and a chronic stage of suppurative alveolitis or true pyorrhea alveolaris is the result.

If not interfered with, this condition may continue indefinitely, now

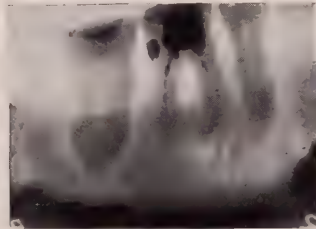


Fig. 4.—Lower first and second molars. The first molar and bicuspid have been cured, the second molar has not. Picture taken three months after treatment.

Typical of many cases.

and then assuming an acute stage when new foci become infected, quieting down again when the sinus is opened to the surface. But each time this occurs there is loss of more bone in the alveolar process or in the deeper cancellous portion, often extending into the body of the jaw, and many times into the antrum. This destruction continues slowly or rapidly, according to the acuteness or chronic activity of the disease, until the tooth or teeth are lost. When the tooth is out, if the infection is not mixed with other germs, such as tuberculous or syphilitic, healing becomes prompt and complete in the normal time for the building of bone structure, that is, in two or three months. Under proper surgical treatment, however, healing can be made just as prompt and complete, and the teeth retained and made useful, provided the dead and infected bone be removed before the foundations of the tooth are too greatly destroyed (Fig. 4).

TUBERCULOSIS.

In considering tuberculous infection as a cause, my experience makes me believe that alveolitis in all its stages, after its initial lesion, is more largely due to this infection than to any other.

Descriptions, by two of our best authors and surgeons, of this disease in other bones than the alveolar process, will better serve than my own, as a description of tuberculous alveolitis and its ravages. The action of tubercle bacilli on bone, as here described, is particularly applicable to carious alveolitis.

Roswell Park says in his "Treatise on Surgery":

The most important and frequent of the infectious diseases common to animals and man, is tuberculosis. Tuberculosis as a form of disease is more prevalent than any other, and is the cause of death of a proportion variously estimated at from 20 to 30 per cent. of mankind. It is a disease which intimately concerns the surgeon, perhaps even more than the physician, inasmuch as it is also the most common of all the so-called surgical diseases. The frequency with which it is met varies in different parts of the country, and in some measure with the character of the population. In the average surgical clinic of the United States, probably 25 per cent. of cases of surgical disease are manifestations of this affection.

Keen says:

As a means of differentiating clinical conditions, the use of these two words is desirable. As a clinical term, necrosis usually means destruction by the gradual extension of a tubercular process. This clinical distinction, however, is not an exact one, because destruction of large areas of bone, the necrosis, is occasionally brought about by syphilitic infection, and rarely by tuberculosis, and molecular destruction of the bone is brought about by a considerable variety of processes, the chief of which, it is true, is tubercular infection. But actinomycosis and syphilis may both lead to the gradual disintegration of the bone without the formation of large necrotic masses of bone.

The presence of necrotic bone, connected with the surface by sinuses, from which comes a discharge of pus, should always lead to the consideration of tuberculosis, actinomycosis and syphilis.

He further says:

Tuberculosis of bone always is dependent on infection of the marrow of bone by the tubercle bacillus. 1. Tuberculosis, I, 160. 2. Surgery (Caries and Necroses), ii, 26. 3. Surgery (Tuberculosis of Bone), ii, 43-45.

Tuberculous infection of the ribs and sternum also is common. In such cases the first symptom often is localized pain or tenderness, usually not severe. In the course of time the soft tissues surrounding such a bone become infected and adherent to the bone, or a "cold abscess" may form, which may perforate the skin through tuberculous sinuses. The diagnosis always, in these cases, lies between tuberculosis, actinomycosis, syphilis, and osteomyelitis; an exact determination of the origin of the cause oftentimes can be made only by inoculating animals with a discharge from the sinus, or by detection of pyogenic organisms or of the miliary tubercle, the histologic unit of tuberculosis, or by detecting the peculiar yellow bodies seen in actinomycosis.

Thus it is seen that these two authorities (whose opinions coincide with all others consulted) describe, under tuberculous infection of bone, just such conditions as obtain in this very prevalent disease of the alveolar process and maxillary bones.

The bending and distortion of the spine and other bones and joints affected with tuberculous germs has its counterpart in the slow separation, twisting or extrusion of the teeth (Figs. 2 and 3).

Park goes into minutiae in regard to the "infectious granuloma" of Virchow, which plays so large a part in the slow destructive process

in caries of bone. This granulation tissue is the effort on the part of Nature to repair the damage done by tuberculous or other infection, but the granules also become the seat of infection and serve as a further means of increasing the progress of the disease, especially that of tuberculous type. Carious necrosis into the alveolar process and jaw bones seems exactly the same in character and extent as this infection in other bones, and in my hands has yielded to the same character of treatment that has proved successful on other bones (Fig. 4).

Although many microscopic tests have been made, no satisfactory results have been obtained. Probably none can be obtained until the work is taken up under proper laboratory environment for both culture and microscopic tests; and even then the work might be uncertain, as Miller has shown⁴ in his endeavors to find a special bacterium of this disease. He sums up his work as follows:

From these experiments, we might conclude that, if there is a specific bacterium of pyorrhea alveolaris, it does not readily grow on gelatin, a result which is of value in so far as it indicates that in further experiments on this subject, media should be employed which admit of being kept at the temperature of the mouth. At the same time the thought suggests itself that possibly the bacterium of pyorrhea alveolaris, like so many mouth bacteria, is cultivable on none of the artificial nutrient media, which would of course render all experimenting useless.

4. "Microorganisms of Human Mouth," p. 329.

(To Be Continued.)

DO WE NEED A NEW DENTAL SCHOOL?*

By E. P. Beadles, D. D. S., Danville, Va.

DENTAL surgery is a specialty of medicine. The courts have so decided. This being true, why do we need a separate degree? How this came about is well known. The time has come for the error to be corrected. Several plans present themselves. The first and easiest would be for the schools to voluntarily adjust their courses to enable the dental student, as well as other specialists, to take the M. D. degree. The second plan would be to pass laws requiring those desiring to practice this specialty to come before the regular medical boards, as the Homeopaths do. There should be two dental surgeons on the board. Should we fail in both of the above plans a new school should be started, with charter to confer the M. D. degree, and teach dental surgery as the major course. This plan is feasible and would pay a splendid dividend to the promoters. Centrally located and well equipped, it would draw students from all parts of the country. The stock should be held by dentists throughout the states. Thus could be built up the finest school any country has ever had for the teaching of our specialty.

* The copy of this paper was lost, and the above is a synopsis of the essay read before the Virginia State Dental Society, 1908.

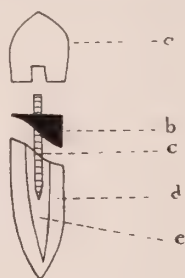
RESTORATION OF FRACTURED OR BADLY DECAYED ROOTS, WHERE THE TOOTH STRUCTURE IS DESTROYED UNDER THE GUM MARGIN *

By H. G. Bow, D. D. S., Louisville, Ky.

AFTER removing all decay, take any ordinary porcelain crown, (I think Justi removable pin crown preferable), and grind crown flat on surface that forms the joint.

Put pin through a piece of inlay wax sufficiently large to fill space between crown and root. Force the crown to the desired position.

Cool wax and remove, preparing the impression as for any cast inlay, leaving wax in position on pin.



a—Crown of removable pin crown. b—Gold inlay restoration cast on pin.
c—Pin. d—Root of cuspid tooth. e—Root canal.

Cast inlay onto pin, then if you have used a removable pin crown, cement crown to pin and finish gold inlay after cement has set, as you can do no polishing after crown is in position. When you have set your crown there will be a restoration with perfect joints, no shoulders or rough margins. There will be no irritation of the soft tissues, and the gum will entirely cover the gold. This crown can always be easily repaired without removing pin, should the porcelain ever break. Grind to fit gold inlay and cement to place a crown of same make that was first used, which can be done in a few minutes with little trouble.

A Logan crown can be used if preferred by casting gold against the porcelain, but in case of a break, it would be more difficult to repair.

*Clinic before the Indiana State Dental Association, June, 1908.

CAST ABUTMENTS FOR THE ATTACHMENT OF BRIDGES †

By W. M. McCall, D. D. S., Louisville, Ky.

CAST ABUTMENTS for the attachment of bridges, using in this case, superior left cuspid to first molar.

Prepare the cuspid, first by removing with the stone sufficient amount of tooth structure from lingual portion of tooth, to give room for

† Clinic before Indiana State Dental Association, June, 1908.

construction of inlay. Grind two small grooves across lingual surface, then with small round bur, make three openings, two towards incisal, one towards gingival. In grooves which were made in tooth, fit number twenty (20) platinum wire and proceed to construct the inlay in the usual manner.

To prepare the molar tooth, grind off oclusal surface, starting at lingual and gradually tapering towards buccal surface. Then cut cavity in mesial portions, extending under free margin of gum, and from lingual to buccal of mesial surface, placing in the oclusal two or three number twenty (20) platinum pins, so as not to come in contact with pulp of the tooth. Proceed to construct inlay in the usual manner. Place inlays in position, take bite and impression, using for dummies Brewster's diatoric teeth. Grind up dummies, swage backing and solder as in ordinary piece of bridge work. A bridge properly constructed and attached by this method is very strong and durable. The main feature is that no gold shows on labial and buccal surface.

CAST ANTERIOR BRIDGE ABUTMENTS AND VARIATIONS OF THE SAME FOR PERMANENT SPLINTING OF LOOSE TEETH*

By George C. McCann, D. D. S., Danville, Illinois

DOCTOR McCANN'S table clinic demonstrated the technique and use of two anterior bridge abutments. One consisting of a root canal dowel, with lingual and proximal gold backing attached. The enamel of the tooth (preferably six anterior) being ground so as to accommodate the occlusion with sufficient thickness of gold. The Margins of the backing carried to self cleansing areas. The other consisted of an anterior attachment for a live tooth (preferably bicuspids). Trimming the lingual, oclusal and proximal surfaces to accommodate thickness of gold and to self cleansing areas. A groove is then produced with a millimeter cross cut fissure bur over the proximal and oclusal surfaces.

Splints for loose anterior teeth were modifications of the abutments. For the lower anterior, axial directed pits, 1.5 to 2 M. M. in depth were made on the lingual. Into the pits stub pins were placed and a casting made supporting pins and furnishing a solid lingual backing to the teeth; a splint was then soldered to either form of bridge abutments placed on sound teeth.

A posterior splint consisted of a wire placed in an oclusal groove of loose teeth and supported by inlays located in sound abutting teeth at each end.

The purpose of the clinic was to present strong esthetic abutment of anterior work by confining the case to the lingual aspect.

*Clinic before the Indiana State Dental Association, June, 1908.

EXCHANGE OF PRACTICAL IDEAS

ONE TOOTH BRIDGE

By **H. L. Curry, D. D. S.,** **Bloomington, Indiana**

In many cases we find one molar or bicuspid extracted, leaving a large space which is seldom filled in by the average dentist. Many of our patients would have this space bridged across if it was not for mutilating one or both adjoining good teeth by crowning.

A much neater method than crowning and swinging on the dummy, is the use of the cast gold inlay for abutments. I find this to be entirely satisfactory and it is strong enough for all ordinary usage. By cutting large approximo occlusal cavities in both teeth, one on either side of space extending well to the gum line, we have ample space to solder to. In soldering the dummy in, use antifix around margin of inlays to prevent solder from drawing over the edge.

Place inlays in cavities and draw with plaster of Paris, using hard plaster for pouring up cast. Let it dry well before using cast to prevent distortion of inlays.

Use either a gold dummy or a porcelain tooth. I find the most ethical piece of work can be produced by using a plain rubber tooth. Take a platinum pin tooth, size to fill the space, grind to fit the gum, and back with pure gold as usual on ordinary facing. Hold to position with wax, trim cast close, invest in some good material, let dry well and you are ready for the soldering block.

When finished, you have a beautiful piece of work, which, when placed in position in the mouth, cannot be detected.

Most patients do not like the idea of crowning a sound tooth and refrain from having small bridges put in on this account. But the inlay abutments seem to strike them in a different way and we are able to give them better and more satisfactory service.

TO PREVENT PLASTER FROM ADHERING TO VULCANITE PLATES

By **R. L. Hesser, D. D. S.,** **Frankford, Missouri**

Before packing rubber give the plaster two coats of Cavitine. Before the second coat is dry, dust with talcum powder.

METHOD OF SWAGING METAL PLATES UPON PLASTER MODELS

By F. O. Kidd, D. D. S., Fall River, Mass.

THIS method, while not new, has served me a good purpose for eighteen years.

The swager is constructed upon the same principle as the small swager that is used for swaging crowns.

First, it is necessary to have one metal die—this need not be perfect—it is used only to approximate the plate to do the hammering upon before the plate is transferred to the plaster model. Plaster model and plate are placed in the swager, first covering the bottom with a few layers of lead shot—"mustard shot"—then a piece of old rubber dam is placed over the plate and model to keep the shot from getting between the plate and model. Then cover the whole with the same size shot, place swager top in position and proceed to swage in the usual way. The plate should be removed and annealed, as usual, and as often as necessary.

In this process of swaging you will not injure your model in the least.

I shall be pleased to answer any personal questions concerning this method to anyone who is interested.

THE CARE OF HYPODERMIC SYRINGE

By Hermann Prinz, St. Louis, Mo.

The hypodermic syringe requires careful attention. It is not necessary to sterilize it by boiling after each use unless contaminated with blood or pus. The simple repeated washing with alcohol and careful drying is sufficient. Readjust the cap, cover the piston rod with a thin film of vaseline, and place in position. If the syringe is boiled all the washers should be removed. Keep it in a covered glass or metal case; leather or felt-lined boxes afford breeding-places for bacteria. Some operators prefer to constantly keep their syringe in an antiseptic solution when not in use; others prefer to place it in a special sterilizing bottle. A suitable sterilizing liquid for such purposes may be composed of—

Cresol,	1 fl. dram
Alcohol,	1 fl. ounce
Water, enough to make	6 fl. ounces

Dental hypodermic needles must be strong; they should be of reinforced steel, 27 B. & S. gauge, and be provided with a short razor-edge point. Thicker needles cause unnecessary pain; finer needles are liable to break. The needle itself should measure a quarter of an inch. For infiltrating larger surfaces, one-half to one-inch needles are necessary. Curved needles are essential in reaching the posterior teeth. The "Schimmel" needles are excellent; they do not fit every syringe, however. For pressure anesthesia special needles are required. They may be bought at the depots or quickly prepared by grinding off the steel needle at its point of reinforcement. The sterile needles should be kept in a well-corked glass tube, and should always be sterilized by boiling after each use in a two per cent. lysol or cresol solution in a teaspoon or test tube, dried with the hot-air syringe and immediately transferred to a sterile glass bottle.—*Dental Cosmos*.

PRACTICAL SUGGESTIONS

ORDINARY FACINGS IN CROWN AND BRIDGE WORK

A SIMPLE YET ACCURATE METHOD—DETACHABLE AND REPLACEABLE

By Roland Jarvis, London, Ontario.

THIS Method, which I shall endeavor to make plain to every one interested is applicable only in the construction of anterior bridges and single crowns involving the six and often the eight anterior teeth.

First, I will state the several advantages gained by the use of this method.

1. The cosmetic possibilities of the finished product are increased by avoiding the display of gold incisal edges.

2. Facings are not subjected to the heat of soldering.

3. Facings are readily replaced in case of fracture.

4. Greater confidence to the operator in the finished product.

5. The intervening cement a support to the frail backing.

6. Time taken in heating and cooling is eliminated.

7. The backing is made to fit the tooth.

In the application of this method all of the facings for both crowns and dummies should be selected and ground to the proper adaptation. Each facing is then backed with 30-gauge gold, but the pins are not bent or cut in any way so that later, the facings can be removed from the several backings after the latter are waxed in position on the model. After the backing of the facings is completed, the backings are removed and the pins tapped or threaded and this done, the backings are replaced again. Over each pin there is now placed a dummy non-fusible nut, the latter being an exact counterpart as far as size is concerned, of a gold nut that is used finally to attach the facing. These dummy nuts are now waxed to the backings, but not to the pins, and all carried to alignment on the model as wanted when completed. The dummy nuts and backings, while the teeth are in position, are waxed to the model and to each other. The facings are now removed from the backings, which is easily done if no wax has been allowed to come in contact with the pins. The backings are now painted with whiting and then small non-fusible pins are pushed through the holes in the nuts and backings so that when the wax is removed later the dummy nuts will be retained in their proper position on the backings with the pin holes in the nuts and backings in proper alignment one with the other. The case is now ready for investment and this is done in the ordinary way. Next remove the wax, and to facilitate the soldering cut a strip of very thin gold or platinum one-half inch in length and as wide as the dummy nut is thick. Now curl this strip round some instrument that has the same diameter as the dummy nuts and then remove the curl thus made and drop it over the nut on the backing. Treat each nut in the same manner. This is done to give the dummy nuts a metal surface on their sides, so that the solder will flow easily round them. Proceed with the soldering. Cool, remove investment and drill out the soft dummy nuts with a wheel bur. After pickling the case it is ready

for the attachment of the teeth. The backings are first covered with a thin coating of cement and the facings are then pushed into place and while the cement is yet soft the small gold nuts before referred to are attached to each pin. They will fit the pockets left by the dummy nuts accurately, and after the cement has become hard the case is polished in the usual way.

This method actually takes up less time than the present one in use. There is no specially constructed facing required or no instrument that almost every dentist has not already in his cabinet. The pins are tapped with the Bryant taps and the gold nuts are driven to place by the Bryant nut driver. As to the gold and dummy nuts, they can be secured from the dealers in dental supplies. The cost of these nuts is so small that it should not deter any one from using them, and should bring the method into general use. There are some facings in which the pins are so close together that it is impossible to use two nuts. In such a case one only is used and in place of the second nut the non-fusible pin is used alone while soldering the case. The use of the cement behind the facings is valuable not only as a sort of cushion, but it also closes up the joint between the backing and facing. In conclusion, let me say, that though the technique of this method is very fine, it is anything but difficult. In my own practice I use it altogether and save time and worry thereby. It is not an experiment but a method well tried, and which has not yet been found wanting. Perhaps I should have stated before that in case of fracture the method of repair is obvious. It is only necessary to tap the broken ends of the pins on facing side of backing and the nut attachment will drop out. You then secure a new facing, grind to position, tap the pins and attach with two new nuts.—*Dental Review*.

ABSORPTION OF PROCESS

By J. A. Bullard, Chicago, Ill.

We do not know why the alveolus is absorbed away so excessively in some cases and not in others but a very accurate opinion can be formed as to whether it is going to take place or not before the teeth are gone. To cite two extreme cases; first, where the process is very dense and heavy, the teeth having long roots and short crowns, but have been lost through caries, with, however, no diseased condition of the roots and no tendency toward pyorrhea; if there is not too much damage done in extracting the process in these cases will not absorb away excessively, but will change very slowly through life, and the soft tissue will remain hard and dense over it.

On the other hand, where a case presents with the process thin and frail and perforated by pus tracts, or where the teeth are being lost from advanced stages of pyorrhea, there will be great change after the teeth are gone and the gums healed. The remaining process will rapidly absorb, and in a few years almost entirely disappear.

A plate made for the first case, six months after extraction, might be worn without much discomfort for ten or fifteen years; while for the second case the plate would have to be changed every two or three years and would need considerable attention in trimming the rims and edges to avoid injury to the soft tissue as the ridge absorbs.

Generally speaking, plates should not be worn over five or six years. Oftentimes a patient will wear a plate too long after the ridge has absorbed away, and the sharp edge of the plate has cut a series of grooves and the soft tissue will hang in flaps under the lip. These flaps should be cut away, the rim of the old plate cut down and covered with antiseptic gauze to keep the freshened surfaces of the lip and ridge from healing together; and in two weeks you can make a plate which will be comfortable and useful.

In a few cases the extreme posterior ridge of the upper will be dense gum tissue, as large as your little finger, and will roll from side to side under pressure. If removed, the plate will set with much more stability.—*Dental Review*.

RELIEF IN PLATES

By J. A. Bullard, Chicago, Illinois.

The reasons for the required relief of the palate of an upper plate are: First, running through the palate on the median line usually there is a hard, bony ridge. This ridge varies in size from being nearly invisible to the eye (but can be felt by the finger), to a large, bony formation, perhaps three-quarters of an inch across. This area of the mouth being hard and the gum tissue soft, it is necessary to construct the plate so that it may rest harder on the gum tissue than in the center of the palate.

Second, the hard structure of the palate does not change in form but slightly during the plate-wearing period of life, while the alveolar ridge absorbs away. The relief allows the plate to follow this absorption of the ridge and still avoid heavy pressure in the palate, and renders the plate useful for a longer time.

The third reason for relief is to allow for the inaccuracy of the plaster model caused by the expansion of the plaster of the impression and model in setting.

The lateral expansion of the plaster of the impression is prevented by the rim of the tray, so it expands in line of least resistance, causing an arching of the palate. The plaster of the model expands in the same line, causing a second lifting of the palate. So the difference in the arch of the model and arch of the mouth is that caused by the two mixes of plaster of paris.

Another reason for relief of the palate where considerable absorption has taken place is to prevent the pressure of the base upon the anterior palatine nerves as they come through the foramen just back of the anterior alveolar ridge. Pressure upon these nerves may cause severe pain. Quoting Dr. T. W. Brophy, "This pressure and irritation caused by the base plate resting upon these nerves is a frequent cause of neuroma and may necessitate an operation."

The same condition may exist where there has been extreme absorption of the process of the mandible. The mental foramen is brought within the area covered by the lower denture, and pressure upon the mental branch of the inferior dental nerve will cause great pain. The plate will have to be carefully trimmed at these points.

In the majority of cases the relief of the plate in the palate can best be accomplished by scraping the impression, and this calls for as much good judgment as any step in the construction of the base.

The hard ridge through the center of the palate should be scraped out its entire length to about one-twelfth of an inch in depth, starting about three-eighths of an inch inside the posterior plate line and gradually deepening the relief to avoid sharp angles, and working forward through the impression to about three-eighths of an inch of the anterior ridge, gradually shading it out. The width of this relief will be determined by the width of the hard ridge through the palate. It will be widest at its posterior part and taper forward. A second relief is scraped on each side of the center one and carried forward and blended with it. This gives three saucer-shaped depressions in the plate. The center relieves the pressure in the center of the palate, and the ones on each side give relief and suction. The little ridges between the center and sides are scraped some, but not removed entirely to open the relief up into one chamber, so the plate feels as though it did not touch the roof of the mouth. The old form of air or suction chamber, only partially relieves the pressure, as the plate rests hard on the palate, both anteriorly and posteriorly to it.

This scraping of the impression in the palate is all the work which is necessary to be done upon it. In a few cases where we have the large, bony formation in the palate, I use tin foil relief on the model, instead of scraping the impression, placing three, four or five thicknesses of No. 60 tin foil over the required area, as the whole palate is hard and needs uniform relief.—*Dental Review*.

METHOD OF INLAY CONSTRUCTION

By M. V. Hopkins.

The method of inlay construction which has been the most satisfactory to me, and which can be used in the greatest variety of cases, is of pure gold made in a platinum matrix. In the preparation of the cavity the usual inlay principle must be followed out. The cavity margins should be trimmed back to sound tooth structure, and the walls so shaped that a matrix may be withdrawn without becoming distorted. If the cavity is in the mesial or distal surface of a bicuspid, involving the occlusal surface, the fissure should be opened throughout its entire length. If this is done I can see no great advantage in forming a step in the occlusal surface.

In the molar teeth a step is sometimes necessary for purposes of retention, but not always, and the operator must be governed by conditions as he finds them. A gold inlay is practically a cement filling protected by a gold covering. It is the cement, not the gold, which comes into contact with the tooth structures, and if the cavity is so shaped that a cement filling would safely withstand the stress of occlusion, and if the gold covering is so shaped as to admit of a firm union with the cement, I can see very little advantage in cutting away sound tooth structure to get greater retention.

After the cavity is satisfactorily prepared, a matrix of 1-1000 inlay platinum is burnished to place. The matrix should be large enough to overlap the cavity considerably, and the burnishing should be especially thorough around the margins of the cavity until they are sharply defined.

The matrix is now removed from the cavity and held by the over-lapping margin in a pair of locking tweezers, and the reverse side of the matrix painted with a solution of whiting and water. The next step is to place a small piece of pure gold of about 30 gauge in the matrix and melt it with the blow-pipe flame. This is repeated until the bottom and sides have a thin covering of gold. The partially filled matrix is now dropped in full strength hydrochloric acid to remove the whiting, thoroughly rinsed and returned to the tooth for re-burnishing.

In building up the balance of the inlay the gold is not melted into the matrix, as a better result is obtained by sweating it in one piece at a time. The criticism has sometimes been made that pure gold should not be used in this work, on account of its tendency to melt up into a round ball, and thus prevent properly contouring the inlay. I have not found this to be the case, and am convinced that trouble of this sort is a result of not properly using the blow-pipe flame. The entire inlay should be heated almost to the melting point of gold before the flame is directed on the small piece of gold which is being added. When this is done it will be found that the small piece will settle into place with very little change of shape. After the inlay is built up to the proper fullness and contour, the margins should be trimmed and as much finishing as possible should be done before cementing into the tooth.

The reverse side should be roughened with a cross-cut bur. Little drill holes may be made, or grooves cut, any scheme resorted to which will give the cement greater retention, so long as the fit of the inlay is not impaired. The final finishing should be done in the mouth.—*Dental Register*.

A METHOD OF REMOVING A BRIDGE

By T. T. Baker.

When necessary to remove a bridge it may be done by the following method without mutilating the abutment crowns: Take a piece of copper wire, 36-gauge, and fifteen to eighteen inches long; pass one end through the interspace near the crown to be loosened, bend the end down and around the wire several times, forming a loop. Form a loop in the other end, through which pass an instrument, and drawing the wire taut, strike it several sharp blows with a mallet. This will jar the cement loose from the tooth. Do this at each attachment.—*Practical Points*.

FAILURES IN PORCELAIN BRIDGES FROM NOT DIVIDING THE STRENGTH EQUALLY

By Geo. W. Schwartz, Chicago, Illinois.

I would like every dentist who does porcelain work to commit this rule to memory: *Divide the strength equally between the roots of the teeth, the metal work and the porcelain.*

Understand when I say, divide the strength equally, I mean you should do so as nearly as is possible. One of the most difficult things I have had to do in teaching students was to impress on their minds the importance of cutting the roots down enough. In most cases they have been afraid to shorten them sufficiently. Bands for porcelain bridges do not need to be very wide. Dentists do not give enough attention to the detail of constructing the metal work. The bands should be made of platinum, as it is more accurately and easily fitted to the roots. Iridio platinum should be used for copes on the bands. Square iridio platinum wire should be used in the caps for posts in the roots used for the abutments. Square posts enable us to remove the caps from the plaster models and replace them in position with more certainty than round posts do. But round iridio platinum wire should be used for bars between the abutments, thus avoiding sharp angles to fracture porcelain in mastication. All joints should be soldered with 25 per cent. platinum solder. You can then be sure your work will go through the furnace unchanged and not come unsoldered at the joints. Platinum backings should be soldered on the lingual surface of the metal work to support the added porcelain. By following this method I believe you will be pursuing the correct one to divide the strength as equally as possible between the abutments, the metal work and the porcelain. In constructing the metal work for a porcelain bridge the dentist fails who does not take into consideration the interproximal space at each abutment. The work at these points should be made so it will not encroach on the tissues. Neither should they be so shaped that they will retain food there. One of the serious objections in making saddle bridges and setting them with cement is that the interproximal space is often obliterated and the tissues abused by the saddle bearing too hard at these places, together with not removing all excess cement from beneath the saddle when the bridge is set. It is imperative for dentists who make saddle bridges to learn how to set them with gutta percha. If a porcelain bridge has been made and is a serviceable piece of work, but lacks artistic results, it still has an element of failure about it and by many patients would be considered a faulty piece of work. For the remedy we must again turn to the preparation of the roots of the teeth for abutments. The roots should be so prepared by beveling the labial or buccal margins that when the caps are made they can be covered by live looking porcelain. To do this the facings should be ground to cover the bands. You cannot get the artistic results by baking porcelain body on the bands that you can by grinding the facings to cover them.—*Dental Review.*

POTASSIUM SULPHOCYANATE AN IMMUNIZER

By F. W. Low, Buffalo, N. Y.

"Low (Dr. F. W.) discusses briefly the report of the committee on scientific research of the New York State Dental Society, in which is recommended the administration of potassium sulphocyanate in one-grain doses, before retiring at night, for the prevention of tooth decay. This commission found that in mouths where rapid and general decay of the teeth exists, potassium sulphocyanate is absent, whereas this salt is present in large quantities in the mouths of individuals whose teeth are immune to decay."

Additional work by others along the same and similar lines confirms the notion that there is much in the findings of Dr. Low and his co-workers; they seem to have in hand an agent the presence of which makes for tooth preservation.—*Buffalo Medical Journal.*

A METHOD OF FILLING ROOT-CANALS WITH PARAFFIN

By W. B. Dunning, New York.

The root-canal having been sterilized in the usual way is dried with alcohol and hot air, followed by the copper-wire point, heated electrically, until the dentine has been thoroughly warmed. Sterile paraffin in liquid form is now introduced from a hypodermic syringe—such a syringe being filled and kept for the purpose—or in solid form by placing a pellet of the same at the pulpal orifice. The hot wire point is now carried through the paraffin and to the apical end of the canal. The paraffin is instantly liquified, and follows the metal conductor with great certainty to the extreme end. Air-bubbles are “tickled” out and the hot wire is allowed to remain a few moments to insure the thorough adaptation of the liquid against or into the heated dentine. Upon cooling, the paraffin shrinks toward the center, leaving the periphery in absolute contact with every portion of the root-canal.

In canals of small caliber the force of capillarity overcomes that of gravity, so that the roots of upper teeth may be readily filled. In large canals in upper teeth, however, it may be found difficult to expel the air-bubbles. In such a case a cold gutta-percha point of proper size may be carried into the liquid paraffin and allowed to remain.

The chief advantage of this method is a perfect sealing of the canal by an inert material which can be inserted and removed without pressure.—*Dental Cosmos*.

AN ACCURATE METHOD OF MAKING A GOLD CROWN

By Louis P. Dotterer, Charleston, S. C.

Where the tooth will permit of very little grinding on account of the sensitiveness of either tooth or patient, the following method is recommended:

After preparing the circumference of the tooth, shorten it as much as possible. Fit a gold band extending from the lowest cervical border to the highest cuspal border, and contour properly. When the band is in position, fit a thin platinum disk inside the band, and upon grinding the surface of the tooth place this disk in secure position with hard wax, then remove it carefully and invest it in some compound, leaving the wax end exposed. After the investing compound has set, remove the wax and fill in with gold solder. This can be nicely done by placing narrow pieces of solder just inside and resting them on the band; a sufficient quantity will flow in the center. Should there be too much solder it can be ground off, and a fissure can be made in it if necessary. The crown will go back in place, and no further grinding of the tooth will be necessary. This method can be used for opening the bite, and is especially serviceable in crowning the teeth of tobacco-chewers.—*Dental Cosmos*.

NON-ABSORBENT COTTON

By E. C. Duryee, New Brunswick, N. J.

Before commencing to operate, prepare a few pledgets of non-absorbent cotton, and have them in readiness. Dry the interior of the tooth and operate until the rising tide of saliva threatens, or you wish to prepare the medicament or mix your filling material; then insert one of the non-absorbent pledgets firmly in the cavity, and even though the tooth may be submerged, the interior of the cavity will remain dry until you remove the cotton and enter on another stage of the operation.—*Dental Scrap Book*.

WARM THE ALCOHOL BEFORE WIPING OUT A CAVITY

It affords considerable and pleasing relief to patients if, when wiping out a cavity in a vital tooth with alcohol, the alcohol be warmed. This may be easily and almost instantly done by igniting the saturated swab and quickly blowing it out.—*Northwestern Dental Journal*.

CASTING GOLD

By Thos. P. Hinman, Atlanta, Ga.

As the portion of the gold in excess of that required for casting is again used for other cases, this gold should, before casting, be remelted with borax on a soldering block, and the button thereby obtained should be pickled before it is used for another case. The reason for this procedure is that the intense heat used in melting the gold for casting causes oxidation, and also that particles of the investment material cling to the surface. The process of remelting the gold clears it of this deleterious matter and gives us a clear cast. If this be not done the extraneous matter will be forced into the mold, causing an imperfect margin or surface.

Hoods for incisors, canines, and bicuspid are made by casting, which somewhat simplifies the construction of this very useful bridge attachment. The canine and incisor hood is made by grinding away the lingual surface of the tooth sufficiently to allow space for strength in the finished hood. With a small saucer-shaped corundum stone No. 11, cut two steps or shoulders on the lingual side of the tooth, one about 1-16 of an inch above the gum line and one about the same distance from the incisal border. In the lower step a hole is drilled with a No. 3 bur for the reception of a pin made of 20-gauge iridio-platinum wire, as heretofore described, and in the mesial step two holes are cut straddling the pulp. These pins, with flattened end, are then placed into the holes and the wax is forced to place and carved to represent the lingual portion of the tooth. The wax is then withdrawn with the pins attached and the usual procedure of casting is followed. Hoods made after this plan will support one end of a bridge replacing four teeth or less; they have been used successfully in my practice for over seven years—but I have, of course, only recently cast them.

The tooth for a bicuspid hood is prepared much in the same way as for a compound cavity except that the lingual cusp is cut away, as is also the lingual curvature of the tooth. This surface is tapered slightly toward the coronal surface so that there will be sufficient cope to prevent distortion in the withdrawal of the wax mold. The mesial and distal surfaces are cut away well to the buccal and lingual angles. To make a wax mold for this hood, a piece of German silver band material is drawn around the tooth and soldered so as to make a band to support the wax while it is being pressed to place and carved. The band and wax model are then withdrawn and the wax model removed from the band and replaced on the tooth, where the finishing touches may be put on.—*Dental Cosmos*.

AN ACCURATE AND SAFE WAY OF APPLYING SILVER SALTS

By Andrew J. Flanagan, Springfield, Mass.

Secure three sizes of smooth, flexible canal-dressing instruments of platinum, German silver, or the so-called platinoid material. Secure a small wide-mouthed bottle and place in the same the granular silver salts. Heat your instrument slightly and plunge it into the bottle, taking up a crystal of any size that you may wish to use. Your crystal which is now only slightly attached, is passed back and forth in a flame until it is thoroughly fused on the very tip of your instrument. Having thus been fused to the end of the instrument, the salt can in full strength be safely and accurately applied to either hard or soft tissues.

Silver nitrate is preferred by the clinician if discoloration be not objectionable.

In applying salts by this method it must be kept in mind that the salts are used full strength; the tissues must therefore be protected by the use of napkins and the saliva pump. If the spot to which the salt is applied is not moist enough to gradually dissolve the fused point, it is moistened with a little moist cotton. By having flexible instruments of three different sizes, the point of fused salt can be applied in varying sizes, which allows greater accuracy. The flexible instruments can be bent to any angle desired. *Dental Cosmos*.

THE SHAPE OF FILLINGS

By Charles C. Allen, Kansas City, Mo.

Take the matter of proximal fillings in central incisors. The marginal line on the labial surface which presents itself to the eye should not appear to be the arc of a simple circle, because, instinctively, the arc of a circle carries with it the suggestion of the completed simple figure. While it cannot be denied that there is design in a circle, yet the more complete design of a different curve, one with an ever-changing radius, is more pleasing to the eye. A filling inserted with cycloidal marginal lines gives evidence of a fuller consideration of the problem involved than is suggested by the arc of a simple circle. Again, if two fillings are opposite in central incisors, the marginal outlines of both should be curves of the same mathematical value. These curves need not be of the same size, but if they are given the same characteristics, they produce the effect of symmetry, and if the curves used are cycloidal, the effect of the two fillings as seen together from a little distance is not that of a circular spot of gold. A circular filling on the surface of a tooth never is attractive or artistic for the reasons stated, and this form should be avoided entirely. For similar reasons, a cervical filling should never have the opposite margins parallel, but the lower margin, while it should not be straight, should be straighter than the upper. Of course, in that class of fillings, where the color and texture of the tooth is sought to be imitated, the marginal effect is of less importance. For if the work is well done, it is assumed that the margins will be inconspicuous, and in this case the best evidence of design would be making these margins studiously irregular, so that any slight variation of color between the tooth and the filling would be obscured by the very lack of conventional form.—*Western Dental Journal*.

MIXING CEMENT

Wm. J. Brady, Kansas City, Mo.

When you mix cement, *mix it*; don't just pretend to. Have a clean glass or porcelain slab, big enough to mix on properly; and have it *clean*. Don't use a paper slab, as the paraffine wax of the paper will mix with the cement, no matter what the manufacturer says about his paper being absolutely impervious. Paraffine is all right—in its place—not in cement. Spatulate the cement quickly and thoroughly—don't be afraid to work at it. Work the cement till it is "smooth," and then stop. Too much mixing is just as bad as not enough. Spread the cement evenly and quickly on the band to be cemented, then dry the tooth; when dry, apply; the cement has firmly adhered to the band by this time, and the band being applied the instant the tooth is dry has a much better chance of sticking than if the tooth is dried first and the cement then mixed and applied—there are so many chances for it to get wet the latter way. These remarks apply equally well to cement mixing for crown and bridge work as for orthodontia bands.—*Western Dental Journal*.

WEAKNESS IN BRIDGE WORK.

By P. S. Struble, Holyoke, Colo.

Most of us that do bridge work have had a bridge come back with a facing broken off. I wish to say that during two years of practice I have not had one come back. I use the following method: First I grind the cutting edge of the facing straight, then back with 36-gauge pure gold, or I sometimes use platinum foil. Then take a piece of pure gold and lay on the end of the facing and place facing and all in a piece of asbestos rope. Then place on the soldering block and flow in 22-carat solder. This gives a good, heavy tip with a good margin and will assist in drawing the solder where it belongs in the final soldering. There will never be any trouble from broken facings when this method is used.—*Western Dental Journal*.

SOME THOUGHTS IN ORTHODONTIA RELATIVE TO THE DECIDUOUS TEETH

By W. O. Talbot.

It has been an accepted theory among dentists and orthodontists that the deciduous teeth erupt into normal arch line, and therefore into normal occlusion in perfectly formed jaws. Cleft palate cases, prognathism, and orthognathism are inherited deformities, and are, therefore, exceptions to the rule. However, external influences begin to operate in many cases very early in the child's life that will produce irregularity in the deciduous teeth; and if such external influences are allowed to remain operative for several years during the period of retention of the deciduous teeth, the permanent teeth must necessarily erupt out of the line of occlusion.

The point of most concern to the orthodontist in these contracted arches is whether they should be expanded to make room for the permanent teeth to come into alignment as they erupt, or should treatment be deferred until all the permanent teeth except the third molars have erupted (which must be into malocclusion). The latter course is usually advised by dentists; but the former course is to be preferred by orthodontists, if the case can be seen in time and the health and temperament of the child and the condition of the teeth will permit correct treatment.

If the arches of deciduous teeth are to be expanded, at what age or stage of development should the work be done, and what appliances should be used to produce the desired movement? *The age is from six to ten years*; but the stage of development and the eruption of the permanent incisors, as well as the condition of the deciduous molars, are the principal factors that determine the time for treatment. Other things being equal, I prefer the seventh to the eighth year. At this age the average case presents with the lower central incisors fully erupted, the upper central incisors half erupted, the lower laterals just showing through the gums, and the first permanent molars in occlusion. At this stage it is not difficult to determine whether there is sufficient space to accommodate the incisors. If there is not, space should be made by moving the deciduous cuspids and molars buccally and the incisors into proper alignment in the arches.

The appliance best suited to these cases may be determined largely by the movement required with the incisors. If they are to be rotated, I prefer the expansion arch. If the incisors require only labial or lingual movement, I prefer some one of the removable appliances for producing the lateral movement and the labial or lingual movement, provided all the temporary cuspids and the molars are in place so as to pit one side against the other. Owing to the constricted necks of the deciduous molars and their shortness in many cases, I find that the wire ligatures irritate the gum and cause too much pain in the changing. An appliance, either fixed or removable, so well fitted to the teeth as to produce no irritation of the gums, and by which the force is continuously applied, has proven most satisfactory and of less discomfort to the patients in producing simple lateral expansion of the arches of deciduous teeth.—*Dental Headlight*.

TO PREVENT STOPPING FROM STICKING TO INSTRUMENTS

By T. J. McCracken, Portland, Oregon

Take an ordinary small shallow cold cream jar with a metal cover which screws on (such as druggists use for putting up salves, etc.). Cut a hole in the metal cover, size of a dime. Place loosely over outside of cover a piece of chamois skin and bind around the edge of cover with dental floss. Pack cotton through hole in cover, thus making a pin cushion affair. Saturate the cotton with olive oil or Black's 1-2-3 or any oil. Replace cover on jar and keep within reach when using any of these plastics. A touch, or slight rub of the instrument on the chamois will take up enough of the oil to prevent the filling material sticking to the instrument and yet not enough to mix in and contaminate same.—*Pacific Dental Gazette*.

SEPARATING MATERIAL—BASE PLATE

By Lucian H. Arnold, Chicago, Ill.

Emphasis has been laid on the use of shellac varnish for a parting material. For a long time I had been using for this purpose a mixture of two parts of shellac varnish and one part sandarac varnish in thin solution. Two coats on a dry impression gave a nice gloss to the finished model. Later, however, I have been using a formula as follows:

To a strong, boiling solution of borax, add shellac scales till the liquid becomes very dark in color—boiling and stirring constantly till shellac is all dissolved. It dissolves nicely but makes a muddy-looking solution, which is, however, a good chemical solution, of very dark red color. In using this separating fluid it is not necessary to wait for the impression to dry, but on taking it from the mouth it is rinsed, dried and given a thin coating of the fluid, allowed to stand one or two minutes—long enough to mix the plaster for the model and then the model poured at once, thus allowing no time for the impression to become distorted. When separated, the model will be found to have a very desirable, glossy surface. As to base plates, I do not like any plate other than a metal plate. After the model is made and the die and counter die run and the plate nicely swedged, it is carried to the mouth and inserted and the finger, on being run around the plate edges, will detect any places where the plate stands away from the gums. With a small round-nosed pliers these outstanding places can be bent as closely to the gums as they may be with comfort, smoothing the edges as the work proceeds, and continuing over the palatal portion and, the edges having all been perfectly fitted, it is no very important matter whether the rest of the plate fits *absolutely* or not. If the margins are all up tight the plate will stay in place and stay well, whether the rest of the plate is in perfect apposition or not.—*Dental Review*.

FITTING A METAL BASE PLATE TO THE MOUTH

By G. W. Ditmer, Chicago, Ill.

I would like to call attention to one point which I saw demonstrated by Dr. Roach. It is in regard to fitting a metal base plate to the mouth. As has been stated, and it is a fact, that very frequently in spite of the good impression you try to get, and the good model, the metal base plate still does not fit satisfactorily. There seems to be a place here or there where the adaptation might be a little better. The trick is this: After you have the metal base plate swedged up, and you find there is a space here or there that is not adapted well, take a little wax and place it on the palatal portion of the base plate, warm it, and compress it to position, getting a perfect impression with the wax on the base plate. Then, if it is for the first swedge you can pour that on plaster, if you wish, and after the plaster has hardened thoroughly, then warm it, and have the wax well distributed, and then burnish the plate down in the particular places, having something definite to go by.—*Dental Review*.

ROOT ABSORPTION

By J. D. McMillen, Kansas City, Mo.

There is not any man of experience but will tell you that the absorption of the roots of temporary teeth stops when the pulp dies. The treatment of temporary teeth is not different from the treatment and filling of the permanent teeth, and they can be handled and treated exactly as if they were permanent teeth. There is no reason at all for not forcing your chloro-percha point as far in the root canal as you want to; it is not an irritant, and will give no trouble. The resorption stops, certainly, when the pulp dies.—*Western Dental Journal*.

MISCELLANY

DENTISTRY IN 1958—A GLIMPSE INTO THE FUTURE

By F. B. Spooner, D. D. S., Brooklyn, New York

Continued from page 930 Dec. Summary.

SYNOPSIS: A New York dentist, while hunting in the Rocky mountains, is buried by an earthquake. He wakes in 1958: is rescued by a flying ship, and carried to Denver. While in the insane asylum his pretty nurse tells him of the marvels that have happened in the past fifty years.

"What is that?" I asked when my nurse entered, being conscious of a pulsation in the atmosphere.

"Seven thirty o'clock," she answered. "We do not need watches. All over the land time is given from a central point, based on the strokes of a ship's bell. Eight pulsations, 12 o'clock, then each half hour an extra stroke up to four, when all starts over again. It is quick to learn with custom. I knew you got up in the night, as a diaphragm in the ceiling records movements. The main office told me you were restless."

"You are so far beyond me, can you tell if consumption is mastered yet?"

"They have it well under control. The germs are starved. The patient is placed in a cabinet where there is no oxygen, or, rather, the same is exhausted. While insensibility exists, an exposed limb that projects is tapped. Blood flows from the artery through a vessel charged with pure oxygen. The patient is kept alive, while the microbes are inhibited. In fact, there are several ways all depending largely on the main idea of keeping the patient alive while the organisms are stifled."

While the girl busied herself, I reflected by what means the Doctor could be convinced of my sanity. Saving the coins, I had no proof, and this was open to suspicion.

Dr. Busum was accompanied by two others, all of whom had the peculiar questioning look to which I was growing accustomed. Realizing that they would not care to admit doubts, I took the initiative.

"Of course, gentlemen, you won't believe that I have been in a comatose state for 50 years, but I have thought of a way to convince you. Suppose I should have left my name and age 60 years ago in a New York bank. I can write it for comparison, should it be possible to go back in the records so far."

Dr. Busum brightened up at this, and after I had written my name, he left the room while the other two visitors engaged with me in conversation.

I learned that gold was no longer a precious metal, the poorest being able to afford a gold plate. The pole was finally reached in 1910. Due to a law as old as the time of Newton, heavy metals had gravitated to the axis of the earth, making the precious metals useless except in the arts. The perturbations of the compass were from the great deposit, and the Aurora Borealis, the reflection of wind swept and polished gold.

The metal was so abundant that a panic ensued. In face of such peril to values, ownership by right of discovery was swept away. The government seized this metal Elephant in the name of the people. Through this emergency was pronounced the truth of *Socialism*. A striking object lesson was given by this act of spoilation, that a government had to be paternal at a crucial time. Socialism was born, which so long had been confused with anarchy. In the new regime there was no more abject poverty; the nation was compelled to provide work for the willing. Swollen fortunes were not allowed, they being kept down by inheritance tax, and no longer was seen the melancholy spectacle of millions left to a degenerate son to fatten vice, and land himself in a mad house.

The new race recalled with surprise the crude conditions, where two hundred millions were spent to send a fleet of iron tubs around the world on a junketing expedition, leaving men at home to blow out their brains for lack of work, and their women to commit infanticide. As we look at the dark ages, they contemplated the laws which allowed one to grasp millions, and build libraries to his name, and another to heap up more wealth, and play golf to lengthen his clutch on the earth, and its fullness.

While learning these mighty changes Dr. Busum burst into the room. On the print he held was traced a duplicate of my signature. There was my father's name, and date of birth, sent from New York through the air, and all in less than an hour.

"I am so glad," said my nurse, when my visitors had departed, "that you are not what we first thought."

"Yes," I said, "they don't believe I am mad; but what am I to do? I had better have died in the mountain."

"Do?" she cried, her big brown eyes contemplating me in surprise, "managers will give big sums to exhibit you. Write a story, 'Fifty years under Pike's Peak.' One of the old presidents made twice as much money as he got while in office, by writing tales about elephants."

"I cannot do it," I answered sadly. "At college I was taught to be ethical. I could not adopt such cheap means to advertise myself."

"Why," she said with emphasis, as if doubtful whether I were a little mad after all, "the chief Doctor here is advertising all the time. I hate him"—here she lowered her voice—"talking to the reporters, and when they would speak to me, just took the words out of my mouth. Allowed them to suppose that it was his clever idea to microphone to New York and ask the bank. You will find it all in big letters—the celebrated neurop-

athist, Dr. Busum, whose private office is — states so, and so.' What has his private address to do with it?"

The girl's words carried me back half a century to one winter night returning from a dental meeting, when my companion tried to shake my faith in dental brotherhood by his scepticism.

"I am sick of the society," he remarked bitterly. "Dr. Glico tonight tells us how to fill deciduous six year molars. Up gets Dr. Borol, assailing him with heat, for advocating sandarac and cotton, but at the same time interpolates that he knows the well earned reputation of the speaker."

The little dentists learn that he, Dr. Borol, used alum, and prussic acid.

The essayist makes known "how much he thinks of the great skill of Dr. Borol, who is mistaken, as what Dr. Glico uses is fusil oil, not sandarac."

Dr. Borol regrets, and tells the unsophisticated dentists, that he has "been twenty-five years in dentistry, and cannot agree that train oil on a rabbit's foot is the proper thing to finish cement fillings, as he prefers whale grease, applied with a brush, made from fuzz found in a camel's ear."

Dr. Glico asks if it is a male or female camel, Dr. Borol answering "a female camel," and this play of humor causes great applause from the little dentists, who whisper together, "big prices, Dr. Borol; immense practise, Dr. Glico."

For both gentlemen find opportunity to mention large fees, deploring how small dentists ask small fees. The tiny dentists are crushed; but it is all a sham battle, for these worthies are only scratching each others backs, and the names of the combatants will come out in print in large letters, and what they say in small letters, and the names of the little dentists in no letters at all.

I was scarcely pleased by this croaking, for I fail to see everything in sombre hues, believing that most professional men have sincerity. Still I could not but be affected by this young girl's advice, as showing that I might be too simple minded. It has, and always will be in some guise, this monster of self glorification.

I was anxious to see some of my dental brethren, to learn of the march since the olden time. Amongst other queries, I begged them to tell me what was thought of extension for prevention, a matter of dispute.

Dr. Handsome—who was the spokesman of the three visitors—smiled as he replied, "we do not use much gold to fill teeth. Nature is wise, and the less we eliminate of her structure the better. That some portions of a tooth have a predisposition to disease, is true; only the actual decay in a proximal cavity is removed. It does not follow that caries will again happen. Cavities are often found on a front tooth, where there is no inter-

space to retain secretions. It is an error to cut and kill for the doubtful reason more will live, and be saved."

"In my day," I said, "the advertising men worked cheap and swindled the public, while the ethical men extended credit, and swindled themselves; how is it in this golden age?"

"We have no trouble now; all dentists, and physicians, get their fees with certainty."

"It was so sudden, *I fainted away.*"

(To be Continued.)

It is as easy matter to criticise the methods and the manners of the men who *do*; but there is great consolation to such men in the fact that the severest critics are never doers. There seems to be a compensating power in nature that denies to fault-finders the power to improve upon or even successfully imitate the work being accomplished by the world's lifters.

Don't envy the man who has reached the top,
But do as he did—don't stop—just hop!
And use your mind until you find
The methods through which his checks are signed.

—HERBERT KAUFMAN.

ANNOUNCEMENT

With pleasure we announce that, on January 1st, 1909
we will acquire the business of

T. O. TRACY & COMPANY
Grand Rapids, Mich.

From that date the Grand Rapids house will be conducted as a Branch, under our name.

This acquisition affords the opportunity to strengthen the personnel of our Company by the addition to our organization of Mr. T. O. Tracy, who will be our Vice-President, with headquarters in Toledo, and Manager of our Retail Sales Department.

Mr. Ray E. Munn, who becomes a member of the Company, will manage the Grand Rapids Branch.

Very respectfully,
The Ransom & Randolph Company.

C. S. Bigelow, President.
T. O. Tracy, Vice-President.
F. G. Crandell, Secretary and Treasurer.

EDITORIAL

DENTAL SOCIETY POST GRADUATE COURSE OF STUDY

THE Illinois Dental Society has started a post-graduate course of study among its members. It is in many respects unique and original, and should develop into the most far-reaching educational work ever undertaken by a dental society. An outline of the course is given in the Society's Bulletin, and is substantially as follows: Articles in the transactions of the state dental society and a number of dental journals, that have been indexed according to the Dewey system for libraries, have been classified into nine groups; General articles on Dental Education, Schools, etc.; Operative Dentistry; Prosthetic Dentistry; Orthopedic Dentistry; Oral Hygiene; Dental Pathology and Therapeutics; Oral Surgery; Dental Jurisprudence and Ethics. Every article published in these journals for the past five years has been classified under one of these groups, and a separate list made out for each group of articles. For a beginning it was decided to use but three groups, viz: Operative Dentistry, Prosthetic Dentistry, and Dental Pathology and Therapeutics.

For each of the subjects a committee of five was appointed and each member furnished with a list of all the articles on his particular subject in one of the selected journals. It is this member's duty to read those articles and write a number of questions which are answered in each one. He will combine these, writing after each question references to the articles in which answers by different writers may be found. The other four members of each committee will do the same, each for a particular journal assigned to him, and the five will then get together and combine their questions and references to answers. The other committees will do likewise and the list of questions will cover almost every phase of each subject. After each question will be a memorandum of the articles, with journal and page for each, in which answers to the question may be found. These lists will then be published in the society publication, The Bulletin. Copies of the journals used will be placed in the leading cities and towns of the State, that they may be within easy reach of the members.

When these lists are published and the local libraries established, the material may be put to practical use in several ways: First, the individual dentist who wishes to ascertain the views of various writers on a particular subject has only to glance over his list of questions on this subject to find in what journal and on what pages answers may be found. Second, the

man who wishes to make a study of a particular subject in which he is interested, can find the writings on that subject arranged in proper form. Third, it can be advantageously used by local societies in the preparation of their programs. A subject may be given to one man to write a paper; it may be divided between several, or a set of ten or more questions may be assigned to as many members. With each man's question will be printed the journals and pages on which the answers are to be found. The Illinois State Dental Society is the first to undertake this great work and the result will be watched with interest by the profession generally.

MEN YOU KNOW

I—THE DEAN

Wouldn't you like to be a Dean?

"What a 'snap'," you reply, "nothing much to do but order others around, look wise and draw your breath and salary."

Looks easy, doesn't it, from the outside?

It was once the writer's lot to be Dean of a dental college and there is another view, an inside view, which I shall try to depict:

The Dean is a man much talked about, especially among the students. One day as I entered the clinic I noticed one of the seniors talking to some visitor, and as I passed I heard him remark: "Yes, sir, our Dean is a *man*." I supposed he intended that I should overhear it and take the remark as a compliment.

"A *man*!" I was uncertain just what meaning this student meant to convey by using the word, "*man*."

You probably remember Plato's definition of a man. He said, "A man is a biped without feathers." And how, on hearing of this, Diogenes went to a neighbor's chicken coop, took a rooster, (no matter whether he asked permission or not), stripped off all his feathers and taking him to the school of Plato set him down among the students with the cynical remark: "Here is Plato's man."

And yet, as I thought the matter over, I came to the conclusion that even with this interpretation, that student's remark was not wholly inappropriate, for the Dean is looked upon as a leader of the roost. He has to watch the old roosters as well as the young chickens. He is expected to keep peace in the family even at the risk of feeling the spurs of others.

He calls the family together that they may pick first of the good things, and if anything be left he has an opportunity of getting it— if he can.

The Dean takes a fatherly interest in the young chicks and teaches them how to practice, "picking their living from the mouths of others."

But the duties of the Dean are numerous and varied. He really does have something to do besides "teaching the young idea how to shoot." In fact, he is expected to do everything that no one else wants to do. He must be a veritable Johnny-on-the-spot; high, low, jack and sometimes "game."

While the pleasurable duties of collecting fees and handling the funds are denied him by the Honorable Registrar and Treasurer, for reasons best known to themselves, the janitor seems to have no scruples in often giving the Dean opportunity of doing some of his work. So the Dean is never lacking for something to do; it bothers him more to keep from being "done."

He even has to resort to the duties of a hostler, at times, to see that no student rides through college on a "pony."

He is expected to dam the patient whenever the student can't do it; and to damn the student, whenever other teachers don't dare to do it.

He has to face the complaints of dissatisfied patients in the clinic. For instance, a robust man presents complaining of pain. The Dean at once diagnoses it as a case of "studentitis" of the jaws, and proceeds to take *the* part of the student; and the man proceeds to take *a* part of the Dean.

The Dean, perhaps, went forth that morning with good spirits and hope, to face his troubles, but he goes home that night with some hope, but no spirit. So he feels compelled to take "more spirits," while his good wife mends the rents in his pantaloons, that his appearance on the morrow may be within the limits of the law.

Then he retires to rest and attempts to forget the past by thinking of hades and other things more pleasant than some of his daily duties.

But there comes a time when his duties are finished for the session. It is then that he has to begin getting himself in shape again for the next school year. So the physician comes to examine his broken and twisted bones and his bruises and wounds and lame muscles, and commands that the Dean remain quiet for at least two months to recuperate.

The physician proceeds to iodoform his wounds, and arnica his bruises, and prescribes assifoetida for his nerves, and sauerkraut as a diet.

So when he has been rubbed, and dubbed, and swathed, and bandaged up, and "done up" by being covered with this physician's odoriferous incense, the Dean feels like "thirty cents," and he smells like thirty thousand.

And then his neighbors become incensed. But not with the bible kind, although one would naturally think it was, to hear their remarks.

They forthwith send for a man from the gas office to detect a break in their pipes, but he fails to control it; then they petition the Board of Health to abate a nuisance somewhere in their neighborhood, but they fail to control it; and finally, in desperation and as a last resort, they send for a body of politicians, knowing that *they* are able to control anything.

So goes his vacation: and at the opening of college the Dean is expected to be on hand with a new smile and make everybody believe that all the joys and pleasures of this blessed earth are centered in the duties of the Dean.

Now wouldn't you like to be a Dean?

NEW PUBLICATIONS

A Work on Operative Dentistry, in two volumes. By G. V. Black, M. D., D.D.S., ScD., LL.D., Dean and Professor of Operative Dentistry, Dental Pathology and Bacteriology Northwestern University Dental School, Chicago. The Medico-Dental Publishing Co., Publishers, Chicago, 1908. Price, 2 volumes, cloth, \$10.00 and \$20.00 for the special edition bound in half morocco.

Volume I is devoted to Pathology of the Hard Tissues of the Teeth. The author first considers the subject of Atrophy of the Teeth and gives the results of his extended investigation of the subject. The well-known condition of notched incisors, commonly known as "Hutchinson teeth" and which Hutchinson claimed was always caused by inherited syphilis, the author believes, from investigations, is not due to any special form of disease, but to conditions of malnutrition, no matter what the disease which has induced the conditions. And he adds: "I have seen cases of typical Hutchinson teeth which were certainly in no way connected with a syphilitic taint of any kind."

Erosion is discussed from various points of view. In treating the subject, "Caries of the Teeth," the author begins with a historical review of the theories of the decay of teeth from the year 1530.

The subject of Caries of Dentine and Enamel has received that careful attention that only a scientific observer could give. There is also a careful consideration of caries as a whole. Its clinical features treating of decays found on various surfaces of the teeth; systemic conditions, physical characters of the teeth, the saliva and micro-organisms of the mouth; utility of studies of dental caries, vital phenomena, etc.; management of patients, cleaning which patients should do for themselves, etc.; the force used in mastication in relation to the strength and health of the periodontal membrane; management of light and care of the eyes; examinations of the mouth; treatment of dental caries, prophylactic and by filling; management of cavities by classes; limitation of extension for prevention; prophylactic value of form in proximal fillings; management of children's teeth, relation of growth and shedding of the deciduous teeth to their treatment, premature eruptions of teeth, absorption of roots of deciduous teeth, treatment of caries of deciduous teeth; the childhood period of permanent teeth including the growth of roots of the permanent teeth, intercusping of the first permanent molars, special functions of the first permanent molars, caries of the permanent teeth during childhood period, etc., and a glossary of technical terms and phrases completes the text of more than three hundred pages in Volume I.

The contents of Vol II consist of the Technical Procedures in Filling Teeth.

The author takes up first, nomenclature of cavities, enamel margins, planes of teeth inclination of cavity walls, divisions of surfaces of teeth in cavity description.

Cutting instruments is the next subject fully considered. Use of the engine, finger power, positions at the chair, finger positions, and the rubber dam and its uses are given due attention.

Next he treats the histological structure of teeth in relation to cavity preparation—Cavity Preparation, Excavation of Cavities by Classes, Physical Properties of Filling Materials and Correlation of Forces Concerned, Filling with Gold, Finishing Gold Fill-

ings, Amalgam, Porcelain and Gold Inlays, Cements, Gutta Percha Exposure and Removal of the Dental Pulp and the Filling of Root Canals, etc.

The text in Vol. II covers nearly 400 pages, and in the two volumes, about 700 pages and 634 illustrations, which are in the main original.

It is impossible in our limited space to give more than a superficial survey of this great work. Together it is the most scientific and at the same time practical work on operative dentistry extant and contains the results of Dr. Black's untiring investigations during many years of his life. No other man has given so much of great worth to dentistry, and no dentist can read or study this work without receiving great inspiration, and in every way be made a better dentist through its teachings. It is the one book that every dentist should have, not for his library shelves alone but to study its teachings and to make them his own.

It is an excellent specimen of the bookmaker's art, well printed, illustrated and bound, and a work no progressive dentist can afford to be without.

PAMPHLETS RECEIVED.

Anatomy of the Palate, Normal and Cleft. A Plea for Operations in Early Infancy.

By Truman W. Brophy, M. D., D.D.S., LL.D., Chicago, Ill.

The Nasal Administration of Nitrous Oxide. By Frank Coleman, L.D.S., England.

Proceedings of the Royal Society of Medicine, Odontological Section.

POTASSIUM SULPHOCYNATE TO LESSEN MUCIN IN THE SALIVA

We have been working along in a quiet way and are proving more conclusively than ever, by clinical tests, that Dr. Low's theories are well grounded and practically correct.

At the New York State Dental Society Meeting in Albany early in May, your correspondent had the satisfaction of showing a number of filter papers which demonstrated the effect of potassium sulphocynate, given in connection with the Schlotterbeck and Foss preparation of hydrastis and pancreatin, for limiting the amount of mucin in the saliva. One case presented was that of a lady somewhat past middle age. The first test showed an excessive amount of mucin in the saliva. The labial surface of the superior anterior teeth were exceedingly sensitive, roughened and partially denuded of enamel. This condition was to some extent, no doubt, due to chemical abrasion. The first step was to refer her to a physician for a thorough examination, which disclosed cardiac disorder and a pronounced state of faulty elimination. This condition was so marked that the physician recommended a visit to Carlsbad for general treatment. The treatment which gave satisfactory results was as follows: A teaspoonful of the Schlotterbeck preparation three times a day after meals; one-half grain tablet of potassium sulphocynate (Park Davis & Co.) each night upon retiring, continued for four weeks, after which this was discontinued and taken again alternately for two weeks at a time for an indefinite period. Bicarbonate of soda was placed over the abraded surfaces each night upon retiring, being carried upon the tip of the slightly moistened index finger. Twice each week the sensitive places were treated with a saturated solution of formaldehyde, carried on the flattened point of an orange-wood stick, gently working it to place to avoid contact with the gums. After two to five minutes it was washed away and thoroughly bathed in dioxygen. The sensitiveness was gradually relieved and the tissue became hardened and polished. The second filtrate after four weeks of treatment showed less than one-half the mucin and the saliva test showed normal conditions, followed by a general improvement of the oral cavity, which is exceeding satisfaction and which has continued up to the present time. Other cases were shown where similar results have been obtained, which indicates most positively that this treatment has a place in the practice of every advanced practitioner.—*New York Medical Journal*.

SOCIETY ANNOUNCEMENTS

At the 1908 meeting, the National Dental Association adopted an amendment making all members in good standing in their state dental societies, or their allied societies, eligible to membership in this association, by presenting to the proper authorities at the regular meeting a certificate signed by the president and secretary of any such society.

Those desiring to take advantage of their privilege under said amendment should act promptly, as the National Association meets early next year, the last Tuesday of March, 1909, at Birmingham, Ala.

Blanks can be secured from the secretaries of the various state dental societies or the undersigned.

H. C. BROWN, Corresponding Secretary,
185 East State street, Columbus, Ohio.

The next meeting of the South Dakota State Board of Dental Examiners will be held at Sioux Falls, S. D., January 12, 1909, beginning at 1:30 sharp, and continue three days. All candidates must bring appliances and materials necessary to do all kinds of filling, crown and bridge work, and articulate a full upper and lower set of teeth. A recent ruling of the board makes it compulsory with all candidates to have their examination fee of \$10 in the hands of the secretary before January 5, and positively no candidates will be received who have not thus complied with said rule.

G. W. COLLINS, Secretary.

The New York Alumni Association, of the Xi Psi Phi Fraternity, met at the St. Denis Hotel on Nov. 18th, and elected their officers for the ensuing year. It was decided to hold our banquet on January 30th, 1909.

Our membership has passed the 200 mark and it is earnestly desired that every Alumnus be present.

To any who have not received full particulars the same will be gladly furnished by our secretary, J. N. Gelson, 673 Vanderbilt Ave., Brooklyn, N. Y.

The next regular meeting of the Indiana State Board of Dental Examiners will be held in the State House at Indianapolis beginning Monday, January 11th, and continuing four days.

All applicants for registration in the State will be examined at this meeting. For further information, blanks, etc., apply to the Secretary.

Middletown, Ind.

F. R. HENSHAW.

AFTERMATH

The Ohio Convention Having had occasion to attend the recent Convention of the
Some Impressions Ohio State Dental Association at Columbus in the attitude of
an onlooker and a rank outsider, some of my impressions may
be interesting, if not instructive.

Impression No. 1:—That Dental Conventions are far and away the most interesting and instructive assemblies of educated men that it ever has been my good fortune to attend.

Impression No. 2:—That the dentist who can attend these conventions and who does not, is surely standing in his own light.

Impression No. 3:—That dentists who do not attend are, as a rule, the very men who could be most benefited by attendance.

Impression No. 4:—Many of the dentists who do attend do not make the most or the best use of their privilege, many of them regarding the whole thing rather as a frolic than as a most beneficial part of their education, a post-graduate course of great possibilities, which may be made especially useful since it is offered to minds that should be trained and mature, able to grasp fully and retain clearly.

Impression No. 5:—That the paper and lecture by Dr. G. V. I. Brown on oral surgery was a "hammer," to which I could have listened for twenty-four hours; and that every dentist on earth, in the United States anyhow, should have a copy of it. (It will be printed in an early number of *The Dental Summary*—the magazine that dentists read—and if your name is not on the list you had better get in your dollar right away.)

Impression No. 6:—That better accommodations for the clinics seems a necessity, if benefit adequate to the trouble and labor of preparation, time and expense is to be hoped for. Interested auditors usually stood six to eight deep around the important clinics, only a few of whom could possibly hope to see all that they should have seen.

Impression No. 7:—That I may possibly have seen a better presiding officer than the new president, but have no recollection of so doing.

Impression No. 8:—That my time was put in to very good advantage, and I hope to attend many more of these interesting and instructive gatherings.

Impression No. 9:—Many manufacturers and dealers made very creditable exhibits, but if any of them attracted more attention than the Brophy Vacuum Casting Appliance, it escaped my notice.

L. Wyn.

Officers of Ohio State Dental Society At the forty-third annual meeting of the Ohio State Dental Society, held in Columbus, December 1, 2 and 3, 1908, the following officers were elected:

President, W. H. Whitslar, Cleveland; first vice-president, M. H. Fletcher, Cincinnati; second vice president, A. O. Ross, Columbus; secretary, F. R. Chapman, Columbus; treasurer, W. A. Price, Cleveland; directors for three years, L. P. Bethel, Columbus; C. I. Keely, Hamilton; J. R. Callahan, Cincinnati; Henry Barnes, Cleveland.

Dr. G. H. Mosher Retires from Practice A letter from Dr. G. H. Mosher, Los Angeles, Cal., brings the news that he has just retired from the practice of dentistry after a continuous practice of about forty-eight years. Dr. Mosher has been a constant subscriber of this journal since its birth in 1881.

Of himself he writes:

"I commenced the study of dentistry early in the year 1860 with Dr. J. A. Robinson, an old timer whom you no doubt remember, at Jackson, Michigan; was with him one year then commenced practice for myself. No doubt you know, that in those days it was customary for a dentist to take a student or apprentice for so much money and his time, and teach him the business in so long a time. In my case Dr. Robinson said he would turn me out a finished dentist in one year for \$100—later on I took a course in the "Ohio College of Dental Surgery" and got my degree. I practiced continuously in Jackson, Michigan, until June 1, 1901, when I removed to Globe, Arizona, on account of ill health. Staid in Globe, Arizona, until October 1, 1905, then came to Los Angeles, where I also practiced until October 1, 1908, when I retired—totaling from the first day of my student days, 48 years and five months. Dr. Geo. L. Field of Detroit and others of those days were very near friends of mine. I served the Michigan Dental Society as an officer in one capacity or another nearly or quite 30 years. Was on the Michigan Board of Examiners for a few years. Always took several Dental journals, went to society meetings when I possibly could and made every effort at all times to "keep up with the procession," have taken the *Summary* since its beginning, as the *Ohio State Journal*, and now I'm out and going to take a good rest until the summons comes, as must come to all. Very truly yours,

GEORGE H. MOSHER."

Robberies

November 13. Dr. Noble F. Mitchell, New Albany, Ky., gold leaf worth \$15.

November 13. Dr. W. S. Woodside, New Albany, Ky., gold leaf valued at \$50.

November 24. Drs. Dorland and Vanden Berg, Grand Rapids, Mich., \$8 or \$10 worth of finished work and gold scrap.

November 16. Dr. P. J. Morton, Lincoln, Neb., quantity of teeth, gold fillings and plates.

November 13. Drs. R. D. Sayre and A. C. Brooks, Amsterdam, N. Y., about \$25 worth of gold.

November 14. Drs. Harold M. Clapp, T. T. Simmons, H. H. Tompkins, R. Frank Jones, E. P. Grove and D. J. Vedder, Jr., of Utica, N. Y., total loss about \$300.

November 21. Dr. Samuel E. Slegel, Reading, Pa., gold leaf and artificial teeth valued at \$350.

Several dentists of Wheeling, W. Va., were robbed of a large quantity of gold during November.

November 30. Dr. A. L. Adams, of Pueblo, Colo., grip containing \$125 worth of dental and surgical instruments.

November 29. Dr. E. A. Doan, South Bend, Ind., gold worth \$50.

November 29. Dr. W. S. Walton, South Bend, Ind., false teeth valued at \$55.

December 2. Dr. J. H. Schlecht, Carthage, Mo., \$40 worth of gold fillings.

December 2. Dr. C. B. Pollard, Carthage, \$72 worth of gold fillings.

St. Louis Dental Society

The St. Louis Dental Society recently elected the following officers: President, Dr. B. L. Pippin; first vice-president, C. C. Cowdery; second vice-president, H. F. D'Oench; secretary-treasurer, G. B. Winter; librarian, J. D. White. Dr. H. Prinz was elected a member of the Joint Medical Council.

Doings of Ohio State Dental Board

Since the organization of the State Dental Board on April 14th, last, six cases have been prosecuted for the illegal practice of dentistry. The Board has been entirely successful in securing convictions in all cases but one. All were first offences and the minimum fine of fifty dollars was assessed in each except one case, in which it was shown that the defendant had assumed a title to which he had no legal right. The fine in this case was one hundred dollars.

The law now in force imposes a fine of from fifty to one hundred dollars or imprisonment for ten to thirty days, or both, for any one practicing dentistry without a license from the State Dental Board, or for failure to display such license in a conspicuous place in the operating room or rooms in which the owner practices.

Two features of the law not as generally understood as they should be, are contained in the clause making it an offence to employ a person who is not a licensed dentist or permit such a person to practice dentistry in one's office; and for any one to assume a title or append or prefix letters to his name which falsely represent him as having a title from a dental college.

The penalty in such cases is a fine of from one hundred to two hundred dollars, or imprisonment for thirty to sixty days, or both.

The Board desires the assistance and co-operation of the societies and individuals throughout the state in enforcing the law and will welcome information concerning known or suspected cases of violations.

Deaths

November 9. Dr. Robert Sabin of Salt Lake City, Utah. Aged 34 years.

November 11. Dr. Thomas Cromwell Royce of Middletown, N. Y. Aged 85 years.

November 16. Dr. John W. Garner of Muncie, Ind., of pneumonia. Aged 59 years.

November 22. Dr. Walter Franklin Fundenberg of Atlantic City, formerly of Pittsburg. Aged 81 years.

November 27. Dr. D. P. Lutz of New Kensington, Pa. Aged 83 years.

December 2. Dr. Gilford Shaw Reed of Cambridge, Mass. Aged 71 years.

December 7. Dr. B. F. Barclay, one of the best known American dentists in Paris for several years, died in New York.

New Professional Organization in South Dakota

On November 28, members of the Aberdeen, South Dakota, District Dental society met to effect a permanent organization.

Dr. A. W. Fossum was elected president, Dr. M. R. Hopkins, vice-president, Dr. H. W. Thomas, secretary, and Dr. M. W. Myler of Selby, treasurer. Besides electing officers the members adopted a Constitution and By-laws. The territory of the society is the northern half of this state and a small portion of North Dakota.

The Fate of a Platinum Thief

A York, Pa., offender, convicted of stealing \$60,000 worth of platinum from a Dental Supply Company, has been sentenced to spend three years in the Eastern Penitentiary. The penalty does not seem unduly harsh. He is fortunate that he was not convicted of stealing \$6 worth of groceries to avert starvation. Now and then such an offender has been given a longer term.

Dental Patient Robbed

A sneak thief entered the reception room of a Detroit, Mich., dental office and made away with a hand bag containing \$39 in cash, a bank book and other articles, while the owner was undergoing treatment in the private office.

**Dr. W. W. Belcher
Honored**

The members of the Seventh District Dental Society, of Rochester, N. Y., at a business meeting Nov. 14, presented to Dr. William W. Belcher, chairman of the business committee, a cut glass water set in recognition of his services in connection with the joint meeting of the Seventh and Eighth district societies.

A resolution was adopted expressing congratulation "that the business committee, headed by Dr. Belcher, should have converted the ordinarily rather small semi-annual meeting of these societies into the largest dental convention ever held in Rochester; a meeting larger than that of the entire New York State Society; larger, in fact, than many of those of the National Dental Association; a meeting attended by hundreds of dentists, some of whom came from far distant cities; a meeting in which 100 separate clinics were presented and the most complete series of exhibits of dental supplies ever brought together in this state; that, in addition, Dr. Belcher and his associates of the business committee gave the Seventh and Eighth District societies and the citizens of Rochester the privilege of listening to Horace Fletcher, rendering a notable service to dentistry and to the city at large."

**Vulcanizer Explodes,
Injuring Dentist**

On December 8, by the explosion of a vulcanizer, Dr. H. A. Rogers, of Bunker Hill, W. Va., was badly injured. Dr. Rogers put the vulcanizer on the kitchen stove while preparing to do some dental work. A terrific explosion followed, and the range, built of heavy steel plates, was torn to pieces and scattered about the room. The vulcanizer was blown through the ceiling, tearing a large hole, and the room was wrecked.

Dr. Rogers, who was standing a few feet away, was lifted bodily and hurled through an open door into an adjoining room, the shock rendering him unconscious. The explosion also set fire to the house.

**Dentist Injured by
Auto Accident**

Dr. Charles Winters, New Castle, Ind., was seriously injured and his automobile wrecked, when the back tire of the machine came off while the automobile was going at a rapid rate. Dr. Winters was hurled violently from the machine and was internally injured, besides suffering a dislocation of one shoulder.

Marriages

November 11. Dr. Joseph B. Davis of Webster, Mass., and Miss Bertha C. Rowell of Pepperell, Mass.

November 23. Dr. Frank Ingram of Cottage Grove, Oregon, and Miss Maude Samuels, of Dayton, Washington.

November 26. Dr. Isidore Lett of Brookline, Mass., and Miss Hilda Nanette Sommer, Brookline.

December 16. Dr. George W. Baylis and Miss Mina Edyth Rowe, at Jackson, Michigan. They will make their home, after January 15, at 432 Williams street.

Fires

November 14, New Orleans Dental College on Carondelet street, damaged \$50,300. Insured.

November 19, Dental office of Dr. Mathews, in Omaha, Neb., practically ruined. Loss covered by insurance.

Will Specialize

Dr. J. W. Jungman, Cleveland, Ohio, announces his retirement from general practice and in the future will devote his entire time to Oral Prophylaxis and the Treatment of Pyorrhea

Alveolaris in that city.

**State Dental
Examinations**

Massachusetts—61 applicants—29 successful.

Washington—46 applicants—25 successful.

Dental Inspection in Schools

There is a strong probability that dental inspection will be given a trial in Springfield, Mass., public schools. The school committee will act upon the offer made by the dentists to give their services free for a trial of the plan along the lines which have been so successful in Brookline. The trial of the plan in the schools will lead to the establishment by the dentists of a dental dispensary, which will bring dental work nearer poor people. It is felt that if the plan is so good that it cannot be discontinued after trial, it ought to be instituted.

New Dental Society Organized in Michigan

Twenty-four of the thirty-six dentists of the copper country are included in the membership of the new Copper Country Dental society, the organization of which was completed at a meeting that was held in Hancock, November 25. At the meeting a constitution and by-laws were adopted and officers were elected as follows: President, Dr. W. S. Whisler of Calumet; vice-president, Dr. W. A. Courtney of Hancock; secretary, Dr. R. H. Banks of Hancock; treasurer, Dr. W. J. Spencer of Houghton.

Appropriation Wanted for Dental College

Requests for appropriations exceeding \$800,000 were presented to the board of regents of the University of Minnesota at their regular quarterly meeting, December 8.

One hundred thousand dollars was asked to provide a building for the use of dental students who heretofore have shared the limited facilities of the medical building.

Exemption from Jury Service

Illinois dentists will ask the next legislature to pass a law exempting them from jury service if it in any way interferes with their business. The assembly will also be asked to amend the law so a license issued in Illinois is good in other states. The governor will be asked to appoint dentists for the state institutions.

Found Dead in the Road

On November 6, James Grant, a dentist of Bristol, Tenn., 40 years old, was found dead by the roadside four miles south-east of Abingdon, Va., with his skull crushed. He had been dealt a blow in the back of the head. It is believed to be a case of murder.

Removes Work Not Paid For

A Chicago dentist was recently sued by one of his patients for \$1,000. She alleges that he violently pulled a crown from one of her teeth because she had not paid him. The dentist will have to pay her \$275 by decision of the court.

Dies While Extracting

At his office in Nicholson, Ga., Dr. W. L. Hood, a well known dentist, died suddenly while in the act of extracting a tooth for a patient. Dr. Hood's death was caused by an attack of heart disease.

Dentist Severely Burned

Dr. E. I. Smalley, of Plainfield, N. J., was severely burned as the result of a heroic act in putting out a fire in his dental office, the timely discovery of which probably saved the building.

Swallows Deadly Poison at Wife's Grave

On December 1, Dr. Randolph F. Hass, a New York dentist, killed himself while kneeling beside the grave of his wife at Woodlawn Cemetery by swallowing prussic acid.

Dentist Invents New Auto Tire

Dr. F. A. Bragg, a dentist of Springfield, Mass., has invented a new method of construction of automobile tires which has already made quite a reputation.



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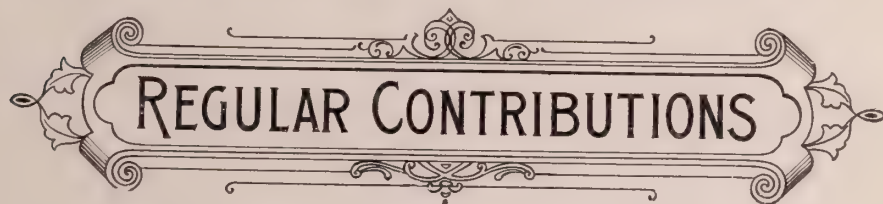
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SUPERNUMERARY TEETH

By G. V. Black, M. D., D. D. S., Sc. D., L. L. D., Chicago, Illinois

Dean Northwestern University Dental School, Chicago

(Continued from page 10, January Summary.)

CLASSIFICATION OF SUPERNUMERARY TEETH.

ANY classification of supernumerary teeth now undertaken must be regarded as tentative only, and subject to revision or complete reconstruction, as time and further study gives a wider view. During a review of the scant literature of the subject, I have been careful to note any words used in describing cases that might be suited to the nomenclature that should be used, and the greater number of the words I have used in the classification have been obtained in this way.

The mouth is divided into the incisor region the cuspid region, the bicuspid region and the molar region. The supernumerary teeth of each of these regions are apt to present forms peculiar to the region, even when the forms are abnormal.

POSITION OF SUPERNUMERARY TEETH.

Supernumerary teeth may be in the line of the arch or out of the line of the arch. The tendency is for all of the teeth, supernumerary and normal, to arrange themselves in the line of the arch, though some of either

kind may miss their direction and wander away. In the crowding that occurs for the accommodation of extra teeth, the arch and the face are often made abnormally broad, and one or maybe two supernumerary teeth are accommodated within the line of the arch. The rule is, however, that supernumerary teeth or some of the normal teeth are crowded out of the line of the arch because of want of room within the arch for all. Whether the supernumerary or the normal teeth be crowded to one side, seems to depend upon which have been developed earliest, or which have taken the place first. In respect to the time of development and presentation through the gums, there is much variation within the usual time of tooth formation, both with the deciduous and the permanent set; supernumerary teeth may appear with either. But no teeth of any kind are formed in any region of the mouth except during the period of normal formation of teeth for that region. In any case in which there are many supernumerary teeth, the arch becomes a jumble for the lack of room for their accommodation, and generally the mouth and lower face become abnormally broad unless the condition is corrected by prompt treatment.

THE TIME OF CUTTING OF SUPERNUMERARY TEETH.

Taken as a whole, it may be stated that there is no difference in the time of the presentation through the gums of supernumerary teeth and of permanent teeth belonging with the temporary or with the permanent set. But there is greater irregularity as to time in both permanent and supernumerary teeth when several extra teeth are present, especially if they be large, and impaction of teeth, or great delays in eruption are much more frequent. Observation on these points seem to show that this is because of interference arising from crowding for room. A tooth a little more advanced in position will hold back one that is less advanced, cause it to be deflected from the line of the arch, or to become impacted. For this reason, it often occurs that supernumerary teeth take the place of permanent teeth, crowding the latter into irregular positions or preventing their eruption. On the other hand, if the supernumerary teeth happen to be less favorably situated or a little later in presenting, they are forced out of the arch because it is already occupied by the permanent teeth. The cases are frequent, however, in which either supernumerary or permanent teeth have crowded between others, broadening the arch to make room for themselves.

FORMS OF SUPERNUMERARY TEETH.

Supernumerary teeth may be of normal form for the region (see Figures of the second, third, fourth, fifth and sixth groups), or of abnormal form.

The supernumerary teeth of abnormal form may be (1) simple conical crowns (see Figs. of seventh and eighth groups); (2) broken cones, or

cones lacking more or less of the apex of the cones; or composed of several cones fused together in abnormal tooth forms (see Figs. of ninth group).

CONDITION OF ROOTS.

Supernumerary teeth may be—(1) free in their alveoli as other teeth; (2) they may be attached to other supernumerary teeth or to normal teeth by cementum—fused teeth—(See Figs. of eleventh group); (3) supernumerary teeth may become attached to other teeth, normal or supernumerary, by the fusion of their dentine germs during the development of their roots (See Figs. of twelfth group). In these cases the pulp canals are generally united. These often appear as if the supernumerary tooth had budded out from the normal tooth and for that reason have been called *Gemma*; plural *Gemmae*; a bud or buds. As a fact, however, the enamel germs have begun their growth separately, but in the growth of the dentine the dentine germs have come together, fused, and formed a common root and root canal or canals. (See especially Figs. 69, 70, 72 and 73 of the twelfth group.) These may be found attached to any of the normal teeth, but are much more frequent in the molar region, and are least frequent in the incisor region; (4) a supernumerary enamel germ may become a part of the enamel germ of a normal tooth or another supernumerary tooth, forming of the two a tooth of abnormal size and form. (See Figs. of thirteenth group.) These are *dichotomes*, or *dichotomous teeth*.

The enamel drops, odontomes and dentigerous cysts have been explained. Though in a sense they are supernumerary teeth, they will not have further consideration in this paper.

For convenience in study, the illustrations have been divided into groups, classing together similar deviations from the normal conditions. In part, these groupings are arbitrary, but for the most part they are natural divisions that will simplify the study of the forms presented by supernumerary teeth. This grouping is for the pictures presented, and does not include all forms of supernumerary teeth. It does, however, include all except the odontomes, dentigerous cysts and a few of the most rare of the forms presented by supernumerary teeth. The principal idea of the grouping is to facilitate the study of the forms presented. The study of cases thus classified will do much more to form one's judgment of practical cases and the lines of treatment that should be followed, than any considerable discussion in words.

TABULAR GROUPING OF CLASSES OF SUPERNUMERARY TEETH.

- First Group—Embryological explanations of the formation of supernumerary teeth. Figures 1-7. (See January Dental Summary.)
- Second Group—Supernumerary central incisors of normal form. Figures 8-11.
- Third Group—One supernumerary lateral incisor of normal form. Figures 12-20.

- Fourth Group—Two supernumerary lateral incisors of normal form. Figures 21-24.
- Fifth Group—Cases of more than two supernumerary incisors of normal form, and case of supernumerary cuspids. Figures 25-28.
- Sixth Group—Supernumerary bicuspids. Figures 29-32.
- Seventh Group—Cases presenting one conical supernumerary tooth in the incisor region. Figures 33-42.
- Eighth Group—Cases presenting two or more conical supernumerary teeth in the incisor region. Figures 43-50.
- Ninth Group—Supernumerary teeth in the forms of broken cones and multiple cones in the incisor region. Figures 51-59.
- Tenth Group—Supernumeraries of the molar region. Figures 60-64.
- Eleventh Group—Supernumerary teeth fused with normal teeth by cementum. Figures 65-68.
- Twelfth Group—Gemmae; or cases in which the dentine germ of a supernumerary tooth has united with the dentine germ of a normal tooth, the two ending in a common root or roots and a common pulp canal. Figures 69-77.
- Thirteenth Group—Dichotomes; or cases in which the enamel germ of a supernumerary tooth is folded together with the enamel germ of a normal tooth, producing a tooth of unusual form. Figures 78-90.

DIAGNOSIS AND TREATMENT.

There is generally but one plan of treatment for supernumerary teeth, and that is to remove them. Ordinarily this should be done at once when a clear diagnosis has been made. This would seem to be a very simple matter, but often it is not so simple as would appear. Supernumerary teeth present through the gums before the normal teeth, accompanying the presentation of the normal teeth or following them more or less closely. Whether they accompany the deciduous or permanent teeth, the clear tendency is to present at the same time with the set to which they belong, only varying in presenting a short time before or after. Several supernumerary teeth, or very large supernumerary teeth, often cause much delay in the eruption of the normal teeth, or may cause the permanent impaction of one or more. There may exist a reasonable doubt as to the presence of the normal tooth and this must be determined by the X-ray. Also an irregularity of position occurring without apparent cause may be occasioned by the presence of an unerupted supernumerary tooth, and this must be sought with the X-ray.

Again, cases occur in which a supernumerary tooth is of normal form, and yet not of a form that matches well with the other teeth of the mouth. It may be a little too small, a little too large, or differently shaped. Such a tooth, particularly if it be an incisor, will sometimes be very puzzling. If the tooth presenting be out of form and the X-ray shows another tooth for

that place in position to come forward, it may serve to clear up the diagnosis, though it is often difficult to distinguish tooth forms with sufficient clearness by this means to clear up the doubt. I have, in a few cases, felt compelled to wait longer than seemed wise, because the conditions were rapidly becoming worse, in order to clearly determine which should be removed, the tooth already through the gums, or the one still hidden by the gums. These are, however, exceptional cases. In general, the diagnosis is easily made.

The treatment consists in the removal of the supernumerary teeth immediately when the diagnosis is clearly made. While, as a general statement, this is correct, cases occur in which it would be radically wrong, and this is particularly true in the molar region where many gemmae and supernumeraries fused to the normal teeth occur, which as a rule cannot be extracted without destroying the normal teeth to which they are attached. (See the eleventh and twelfth groups of illustrations.) These will be described later. Again, it occurs often that cases are not presented until all of the damage possible to the features has been done, and has become fixed by reason of the completion of the developmental period, as in persons who have arrived at maturity or middle life. If at such an age a supernumerary tooth of normal form is in the line of the arch, and especially a single extra lateral incisor, the deformity may be less if it remains than if extracted. But if the case is presented at the normal time of the cutting of the teeth, any supernumerary tooth should be removed that is free in its own alveolus, or that is not attached to a normal tooth. At such a time there is little danger that the arch will not assume the normal form after the extraction, even though the gap left by extraction be the entire width of a normal tooth.

The supernumerary teeth of normal form for any given region are often so perfect that it is impossible to tell the supernumeraries from the normal teeth. In that case, in treatment by extraction of the superfluous teeth, it is unimportant which teeth are removed, the supernumerary or the normal. The remaining teeth, after extraction, should be those in the best position (Fig. 26). Any number of well-formed incisors up to eight have been found, two more than in the typical mammalian dentition. I will show a case of nine bicuspids in the lower jaw (Fig. 32), one more than occurs in the typical mammalian dentition. Four perfect molars are sometimes seen (Fig. 64). Occasionally, however, it happens that though the supernumerary teeth are really of very good form, they do not match the other teeth in contour. Only a short time ago I was compelled to await the more complete eruption of two extra central incisors in order to determine whether they would match the forms of the lateral incisors better than two central incisors already in place. (See Figs. 10, 11.) The central incisors in place were of excellent form, but had much less inciso-gingival curvature than the lateral incisors which were already in position. It was found that the erupting teeth matched the laterals best, and were the true normal

teeth*. In the bicuspid region the supernumerary teeth are in normal form for the region much more generally than in the incisor or molar region. Indeed, very few conical teeth appear among the bicuspids. Very few perfectly formed supernumerary molars are found.

The abnormal forms in the incisor region are for the most part simple cones, or the broken cones, in form, and are very generally free in their own alveoli. The simple cones are the most primitive forms of teeth, generally straight and pointed, often quite sharp, resembling more the teeth of the fishes or the reptiles than the teeth of mammals. These are probably all developed from the epithelial masses separated by absorption of the cords which reach into the tissues from the epithelial bands to connect with the developing germs. These masses of epithelium are generally absorbed and disappear, but as previously stated, evidently sometimes persist and develop an enamel germ. In this case, they seem to have lost the "vis formalis," or the normal formative or modeling power; and the resulting teeth are of the most primitive form and are often very small. They may occur singly or in twos and threes, or in greater number. In the incisor region, however, these formed of multiple cones, or these that have lost the apex of the cone, particularly the latter, are often very large teeth, and are of a form not at all resembling the normal incisors. Neither do they resemble the molars, though occasionally mistaken for transposed molars. (See Fig. 58.) They present rounded crowns, with a tendency to the conical form, but end suddenly in blunt ends, which are often deeply fissured and ragged.

When they are first to take their place in the arch in the incisor region, they completely displace the normal incisors and produce a frightful deformity. In some of the cases, the normal incisors are prevented from erupting and become impacted. A number of years ago I had a little patient who, as the first front tooth of the supposed permanent incisors, had one of these monster teeth on the right side. I extracted it on sight. (See Fig. 51.) The left central came within a month, but the right did not. About a year later another of these monster teeth appeared in the place of the right central. This was removed. And after another year, there being no signs of the normal right central, I placed a little plate, supplying the missing tooth. When she was sixteen years old she made complaint of a sore spot on the alveolar ridge under her plate, and I found the edge of the normal central. I threw her plate into my scrap drawer, and within a few more months she had as complete and normal a set of incisors as the most fastidious person could wish. Without this treatment the rightful expression of the young girl's unusually pretty features would have been ruined. There is no other form of supernumerary teeth so destructive to the general symmetry of the features as these large, broken, conical forms.

*NOTE. Since writing the above, this case was seen seven months after extracting the supernumeraries. The arch has already assumed the normal form without further treatment.

When the normal teeth have been first to take the place, the smaller supernumeraries, if not between the central incisors, are most generally pushed to the lingual. The pointed cones are much more frequent, but do much less damage, though they often disarrange the arch badly if not promptly removed. They occur singly or in twos or threes. Between the normal central incisors seems to be the favorite place for the development of those that erupt prior to the normal teeth. Those that come later are usually forced into positions to the lingual of the arch. Gemmate, or fused teeth, are very rare in the incisor region, and supernumerary teeth may very generally be extracted without fear of harm.

In the cuspid region, supernumerary teeth are rare. I have seen but two cases of extra cuspids of normal form and the supernumeraries of conical form appearing in that neighborhood seem to belong to the incisor region.

In the bicuspid region, supernumerary teeth are not so frequent as in the incisor and molar regions, but the tendency of those that do appear to assume a form normal to the region is so different from what is seen in the incisor and molar regions as to be very remarkable. I have one cast of a lower arch with nine bicuspids, each one a fairly good normal tooth form. (Fig. 32.) There have been quite a number of cases reported, with three bicuspids on each side, and occasionally a single extra bicuspid is seen. Conical teeth in this region are rare. I have but one in the Northwestern University Museum, and it is a gemma. (Figs. 69, 70.) I do not remember of seeing but one other reported. Very recently two misshapen tooth masses have been found in the bicuspid region.

In the molar region supernumeraries of normal form are rare. A few cases of four molars of normal form on each side have been reported. (Fig. 64.) Those that I have seen have been so diminutive as to be abnormal (Fig. 63), and generally the lobes have not been at all well-formed. Neither are the true conical forms often seen in the molar region, except as small gemmae. The malforms in this region that are free in their own sockets are generally blunt-ended, diminutive teeth, showing some tendency to the molar form. (See the tenth group of illustrations.) A few of them, however, are very small, rounded pegs. Much the larger number of these teeth appear on either the buccal or lingual sides of the arch and most often occupy one of the embrasures. They are often harmless. But whenever there is much tendency to caries, decay is very likely to occur in both the supernumerary and the molar which is its next neighbor. For this reason, it is desirable that they be removed at once when discovered. In this, however, I have learned to be very cautious, and would advise that these should never be extracted until it is definitely determined that the supernumerary is free in its own alveolus. If an instrument can be so placed between the supernumerary and the normal tooth that a prying motion may be made, the supernumerary may be seen to move slightly if it is free in its own alveolus. If it is clear that it moves independently

of the molar, it may be extracted without danger. If it cannot be made to show movement, let it alone, for, in that case, it is a fused or a gemmate tooth. I have seen a number of valuable molar teeth lost by a failure to make this determination before attempting to extract a comparatively inoffensive supernumerary tooth in the molar region. Usually the supernumerary will be broken. Then, if it be a case of fusion, i. e., attachment by cementum, the root canal of the broken tooth may generally be filled and the broken end smoothed away without disturbing the molar tooth. But if the supernumerary be a gemma, in which the two root canals coalesce, it generally means the loss of the normal molar.

FUSED SUPERNUMERARIES AND GEMMAE.

These are not to be extracted, except under conditions that call for the removal of the tooth to which they are attached. This has been sufficiently stated in considering supernumeraries that are free in their own alveoli and need not be repeated here. The tooth that has become fused to another tooth is attached by the union of the cementum of the two, and each tooth is perfect in itself, having its own pulp chamber and root canals complete. (See figures of the eleventh group.) The pulp of either one of the two may be removed and the root canals filled without disturbing the pulp of the other, provided no arsenic is used. By far the larger number of supernumeraries fused to normal teeth are found in the molar region. It is in this region, also, that we find the greatest number of normal teeth fused together. With these we have nothing to do in this article, further than to say that the fusion of one tooth with another is not in any wise peculiar to the attachment of supernumeraries to normal teeth.

GEMMAE OR GEMMATE TEETH.

These are a distinct class from the fused teeth. They are practically always formed by the union of the dentine pulp of a supernumerary with the dentine pulp of a normal tooth, during the otherwise normal growth of the dentine. In this case, there are always two distinct, or practically distinct, enamel caps; the supernumerary and the normal enamel germ, or possibly two supernumerary enamel germs. But in the growth of the dentine germs a fusion has occurred, and generally the pulp canals have united and the two pulps have one common apical foramen, or in the molars, two or more. (See figures of the twelfth group.) In any attempt at the extraction of the supernumerary, therefore, the normal tooth will be destroyed. If the pulp is to be removed from the one, it must be removed from both. Therefore, an accurate diagnosis is requisite in any treatment whatever of these cases. Also in considering them, a distinctive nomenclature is necessary, so that no mistakes shall occur. The word *gemma* has been loosely used to represent the union of two teeth in any one of several different ways that would require radical differences of treatment. An-

other word might be better for that reason, but I find no other that seems to describe the particular condition as well. Many of them look as though the little tooth had actually budded out of the larger one.

THE DICHOTOMES, OR DICHOTOMOUS TEETH.

The dichotomes are again a distinct class of abnormality, misshaping or misbuilding which should be expressed by a distinct word form. The word I have chosen is not altogether satisfactory, and I should be glad to change it for a better. The word, *dichotome*, means practically twofold; *dichotomous* is the adjective form. In botany, a *dichotyledon* is a plant that has two seeds in one pod. Another form of the word, *dichotyledonous*, in botany means a regular division into two equal branches. Here I have used *dichotome* to represent a tooth that is formed by the union of two enamel germs. It is a very distinct class of deformity in which a supernumerary enamel germ has become united with a normal enamel germ, and the two are folded together for the formation of one tooth, having a common pulp and root canal. I have seen these in the incisors and molars. (See figures of the thirteenth group.) The greatest interest is in the incisors, and particularly the upper incisors and any of the lower incisors. In the upper centrals the two enamel germs, the supernumerary and the normal, are often so folded together that the tooth is enlarged and presents a triangular or notched form instead of the usual straight cutting edge, or the cutting edge is divided into two parts at the mesial or distal angle. (See Fig. 81.) In the lower incisors the union of the supernumerary and the normal tooth is occasionally so smooth that the lines of union can scarcely be discovered. The effect is to produce a tooth closely resembling an upper central incisor. (See Figs. 89, 90.) This in a lower front tooth is a serious deformity. These are rather rare forms of deformity, but the cases are important, particularly on account of the extreme difficulty of treatment. Indeed, no treatment has been devised, except to cut away the crowns at the proper time and substitute artificial crowns. I illustrate the methods of treatment used in one of these cases (Figs. 80, 81, 82, 83 and 84), and give illustrations of several other similar cases.

Further definitions of forms of supernumerary teeth may become necessary after larger collections of cases have been secured. We cannot expect that the number of cases now available, only a little more than two hundred represented by casts and well-executed illustrations, will represent all possible forms. It should also be stated that cases will now and then occur which cannot be assigned definitely to any one of the groups of supernumeraries named. A considerable number of gemmae will be found in which there is some part of union of enamel, as well as dentine and other things that prevent this or that case falling definitely and easily into the groupings suggested. These classes represent fairly well the more important deviations from the normal forms of supernumerary teeth, but there are some others for which class names are as yet wanting. The most fre-

DESCRIPTION OF CUTS

SECOND GROUP—SUPERNUMERARY CENTRAL INCISORS OF NORMAL FORM. FIGS. 8-11.

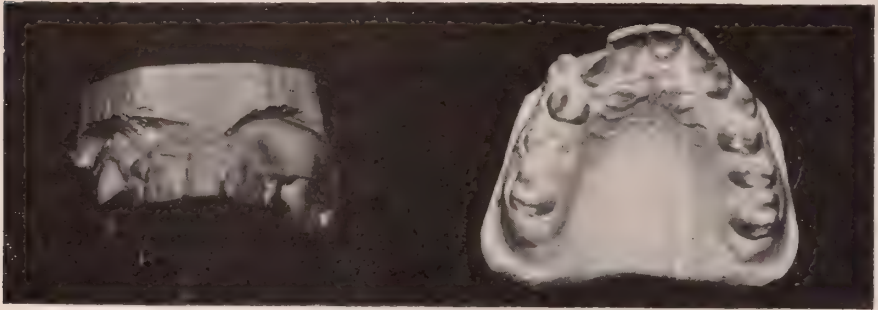


Fig. 8

Fig. 9

Figs. 8 and 9. Labial view and occlusal view of a cast showing one supernumerary central incisor. Notice that because of the broadening of the incisal area of the arch, the cuspids are crowded out of line.

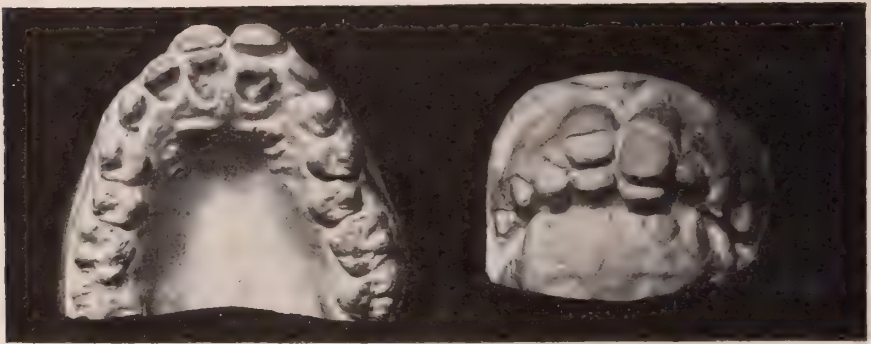


Fig. 10

Fig. 11

Figs. 10 and 11. Occlusal view and labial view of casts of a case showing two supernumerary central incisors. The true normal central incisors were several years late in presenting through the gums, as may be noted by the fact that the bicusps and second molars are in place. The treatment was by removal of the two centrals standing to the lingual.

THIRD GROUP—ONE SUPERNUMERARY LATERAL INCISOR OF NORMAL FORM. FIGS. 12-20.



Fig. 12

Fig. 13

Fig. 14

Figs. 12, 13. Occlusal view and labial view of a case of one extra lateral incisor standing in the line of the arch. The arch was fully formed when case was observed. No treatment.

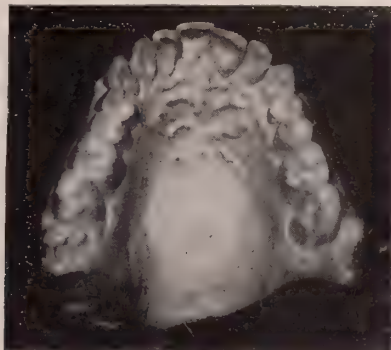


Fig. 15

Figs. 14, 15. Labial view and occlusal view of case of one extra lateral incisor in the line of the arch, and with the normal cuspid and also the normal central incisor of the same side partially displaced labially. Observed first in the adult. If this case had been treated by the removal of the extra lateral incisor when it first appeared through the gums, the arch would have come into perfect alignment without other aid.



Fig. 16

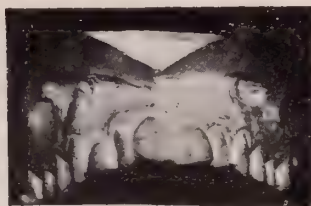


Fig. 17

Fig. 16. Occlusal view of case in which an extra lateral incisor is crowding the arch. Notice that the shedding of the temporary molars is in progress. The correct treatment is the immediate removal of the supernumerary lateral incisor.

Fig. 17. Labial view of an arch into which an extra lateral incisor has forced its way. Notice that the bicusps and molars are in place. The removal of the supernumerary tooth when it presented through the gums would have given a normal arch.



Fig. 18



Fig. 19

Fig. 18. A supernumerary lateral incisor in the deciduous set of teeth. The alignment is very good and no treatment is necessary. The rule seems to be that supernumerary permanent teeth do not follow because of supernumerary deciduous teeth.—*Dental Cosmos*, Vol. 36, Page 80. J. W. Foreman.

Fig. 19. A case presenting five incisors in the lower jaw. The alignment is perfect. The case requires no treatment.

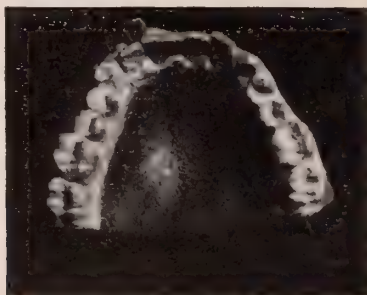


Fig. 20

Fig. 20. Occlusal view of a case in which a supernumerary lateral incisor has presented to the labial of the arch. This should be removed at once, no matter what the age of the patient when it is observed.

FOURTH GROUP—TWO SUPERNUMERARY LATERAL INCISORS. FIGS. 21-24.



Fig. 21



Fig. 22

Fig. 21. A case in which two supernumerary lateral incisors have been crowded to the lingual of the line of the arch. Extraction is the proper treatment. *Dental Cosmos*, Vol. 46, Page 493, R. G. Palmer.

Fig. 22. A picture made from the skull of an ancient Peruvian, showing the alveoli of two supernumerary lateral incisors. This skull is in the Field Columbian Museum, Chicago. I have personally examined this skull and regard it of especial interest as showing that supernumerary teeth are not confined to modern times—not to what we term the civilized races of men. *Dental Cosmos*, Vol. 39, Page 455. Dr. George A. Dorsey.

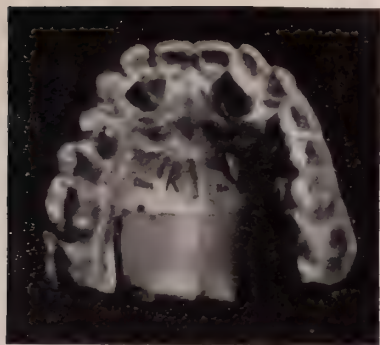


Fig. 23

Fig. 23. Occlusal view of a case in which two supernumerary incisors have been crowded to the lingual of the arch, while the arch is otherwise in fairly good form. An adult. Extraction of these teeth is the proper treatment at any time. They should be removed on sight—the earlier, the better.

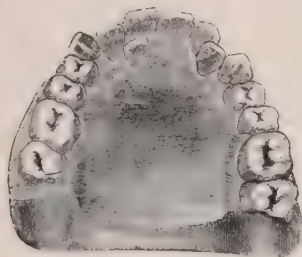


Fig. 24

Fig. 24. An occlusal view of a case presenting two supernumerary lateral incisors of good form which have thrown the alignment of the arch into considerable disorder. A neglected case observed in the adult. Extraction of the supernumerary teeth when they first appeared would have allowed the arch to assume the normal form. *Burchard's Dental Pathology and Therapeutics*, 1904, Page 224.

FIFTH GROUP—CASES IN WHICH THERE ARE MORE THAN TWO SUPERNUMERARY INCISORS OF NORMAL FORM. FIGS. 25-28.



Fig. 25

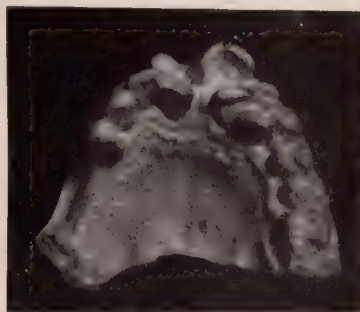


Fig. 26

Fig. 25. A case presenting three supernumerary incisors of normal form—in all seven incisors, four of which are centrals in form, and three are laterals. A neglected case observed in the adult. Doubtless this arch could have been rendered normal by judicious extraction of the superfluous teeth at the proper time, and some use of regulating appliances. *Coleman*, 1882, Page 61.

Fig. 26. A case in which eight incisors appear in the space between the cuspids. This case was examined by me in the clinic of Northwestern University Dental School. The woman was then about thirty-five years old. The mouth was very much broader than normal and made a very bad appearance. I was of the opinion that the extraction of the teeth most out of line in the formative period, or when the teeth were taking their places, would have been sufficient to render the arch normal. Certainly a very little help from Orthodontia appliances would have been sufficient. The woman stated that her parents made considerable effort to have something done when she was yet a child, but without success.

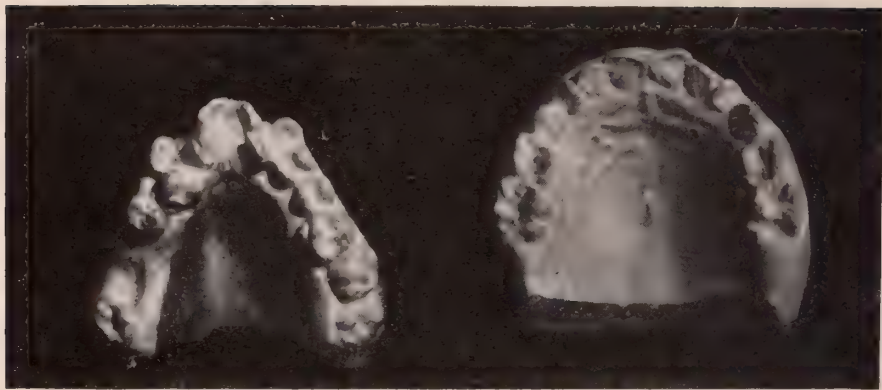


Fig. 27

Fig. 28

Fig 27. A case of extreme irregularity of the teeth, only the normal number being present, as a comparison with Figs. 26 and 27.

Fig. 28. A case showing the deciduous teeth in which there is one supernumerary cuspid on each side between the normal cuspids and the lateral incisors. The supernumerary teeth are so turned in their sockets that the lingual surface is to the distal in each case, and are smaller than the normal cuspids. Supernumerary cuspids are very rare.

SIXTH GROUP—SUPERNUMERARY BICUSPIDS. FIGS. 29-32.



Fig. 29



Fig. 30

Fig. 29. A case of three bicuspids on one side in the lower jaw. *Dental Cosmos*, Vol. 31, Page 741, W. S. Ritchey.

Fig. 30. Three bicuspids on one side in the upper jaw. Extraction at the proper time would have been the proper remedy in each of these cases. *Coleman's Dental Pathology*, 1885.

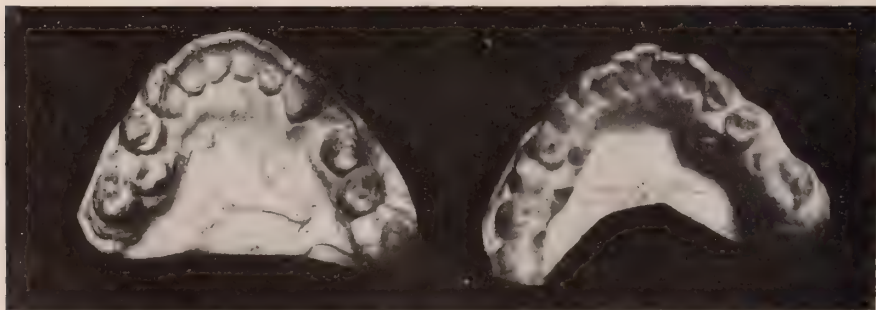


Fig. 31

Fig. 32

Fig. 31. A case in which there were three bicuspid on each side of the lower jaw. The case came into the Infirmary of Northwestern University Dental School. I found the bicuspid which has been removed, out of line to the buccal side of the arch. It was decayed so badly as to expose the pulp and was very painful. A student was directed to make an application to relieve the pain temporarily, place a cement filling to prevent pain in the operation, and take an impression. But the tooth was extracted without the impression having been taken. A few weeks later the boy returned and the impression was taken and a cast made from which this picture was photographed. Extraction of the bicuspid most out of line, as soon as the teeth came through the gums, would in itself have allowed the case to develop in normal form.

Fig. 32. This case of nine fairly well formed bicuspid in the lower jaw was observed by the author in the clinic of Northwestern University Dental School. The superfluous teeth were removed, though it was a little late to obtain the best results. While the cast is a good one, it is quite difficult to show all of the bicuspid well in a photograph. This case has one more bicuspid (premolar) than occurs in the typical mammalian dentition, and therefore it is not a reversion of that type.

SEVENTH GROUP—CASES PRESENTING ONE CONICAL SUPERNUMERARY TOOTH IN THE INCISOR REGION. FIGS. 33-42.



Fig. 33

Fig. 34

Fig. 33. One conical supernumerary tooth between the central incisors. This specimen has a slight additional cone on one of its surfaces which shows in the picture.

Fig. 34. One conical supernumerary tooth between the central incisors which had taken its place before the eruption of the permanent central incisors. It has caused a marked irregularity in the position of these teeth.

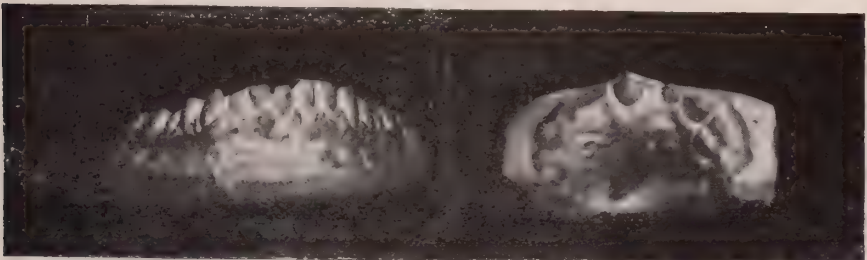


Fig. 35

Fig. 36

Fig. 35. A conical supernumerary tooth between the central incisors of the lower jaw, with all of the teeth in excellent alignment.

Fig. 36. A rather large conical supernumerary tooth that erupted some time prior to the eruption of the central incisors. It was removed when the normal incisors were

presenting through the gums and the arch, which otherwise would have been thrown into confusion, developed normally.

Fig. 37. In this case the supernumerary tooth and the normal incisors were found presenting about the same time. The supernumerary tooth being small, was forced

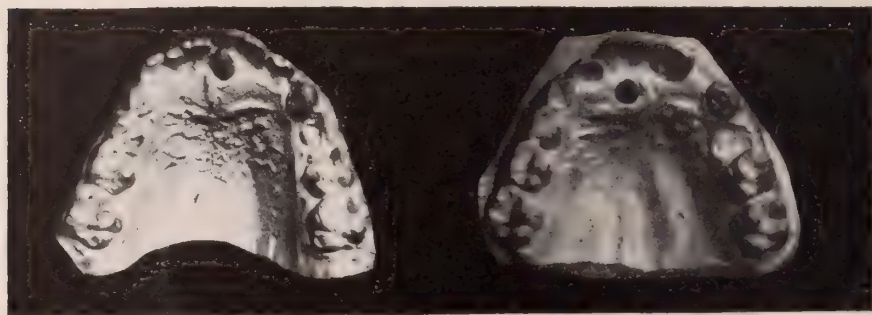


Fig. 37

Fig. 38

into a lingual position, and very little derangement of the normal alignment of the teeth had occurred. After the removal of the intruder, the arch became fully normal.

Fig. 38. In this case the conical supernumerary tooth has come through the gums after the central incisors were erupted, and is pushed well to the lingual. Extraction was all that was needed.

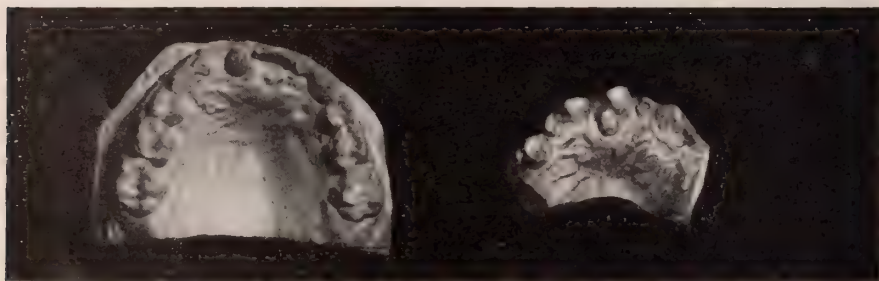


Fig. 39

Fig. 40

Fig. 39. A conical supernumerary tooth that has taken its place before the central incisors erupted has pushed one of these far to the labial, and delayed its eruption. The teeth assumed normal positions after extracting the intruder, without other treatment.

Fig. 40. In this case a conical supernumerary tooth was discovered erupting before the shedding of the deciduous teeth. Prompt extraction prevented further difficulty.

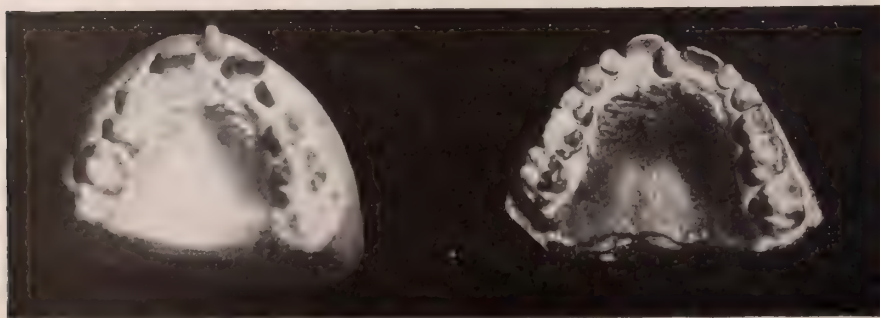


Fig. 41

Fig. 42

Fig. 41. A large conical supernumerary tooth which has taken its place between, and partly to the labial of, the central incisors, producing a very bad appearance of the child. Extracting this tooth was all that was necessary to remedy the deformity. During the development of the arch the central incisors, which were much spread apart, came into normal positions.

Fig. 42. A conical supernumerary tooth erupting before the central incisors had taken their places, has spread them apart and pushed one of them considerably to the labial. Note that the other deciduous teeth have not yet dropped away. Extraction of the supernumerary tooth was all that was necessary to allow the arch to assume its normal form.

(Note) It should be observed that of these nine cases, all except the one in the lower jaw, (Fig. 35), were treated during the period of shedding the deciduous teeth. This early treatment allows the spontaneous correction of the deformity caused. It is especially important that such teeth be extracted promptly, for the longer they remain, the less perfectly the normal teeth will recover their positions. The case illustrated in Fig. 34 was the only one that required the aid of the Orthodontist.

EIGHTH GROUP—TWO OR MORE CONICAL SUPERNUMERARY TEETH IN THE INCISOR REGION.
FIGS. 43-50.



Fig. 43

Fig. 44

Fig. 43. Two conical supernumerary teeth between the central incisors, which have caused the latter to be spread widely apart. The supernumerary teeth were removed at once, and during the coming of the other permanent teeth and the development of the arch, the central incisors came only fairly well into the normal position.

Fig. 44. Two conical supernumerary teeth erupted to the lingual of the permanent incisors. When the patient was seen the arch had been fully formed. While the extraction of the supernumerary teeth relieved the case of the obstruction to the tongue in speaking, it was too late for the irregularity of the incisors to be corrected except by the process of regulation.



Fig. 45

Fig. 46

Fig. 45. Two conical supernumerary teeth to the lingual of the central incisors which has caused these latter to protrude labially. When the case was presented, the arch had been fully formed in this false position, and the deformity could be corrected only by the orthodontist after the removal of the supernumerary teeth.

Fig. 46. This is another neglected case in which the one conical supernumerary tooth seen lying on the cast, had been extracted just to the lingual of the right central incisor when the impression was taken. Another conical supernumerary tooth, not removed before taking the impression, is seen partly between the cuspid and the first bicuspid, and partly to the labial on the left hand as it stands in the picture. This latter is a very unusual position for a conical supernumerary. This was extracted later. But little improvement in the position of the remaining teeth could be expected from the extraction alone, because the formative period for the jaws had fully passed.



Fig. 47

Fig. 48

Fig. 47. In this case two conical supernumerary teeth were found, one to the lingual of the central incisor, and one to the lingual of the lateral incisor of the right side, as the picture stands on the page. This case was corrected so early that the teeth pushed out of position would recover their alignment.

Fig. 48. A case in which there were two supernumerary teeth closely resembling cuspids, but one of the normal cuspids was in position and the point of the cusp of the other was through the gums.

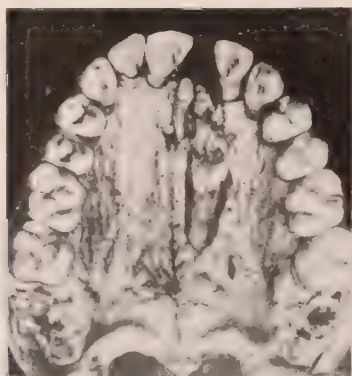


Fig. 49

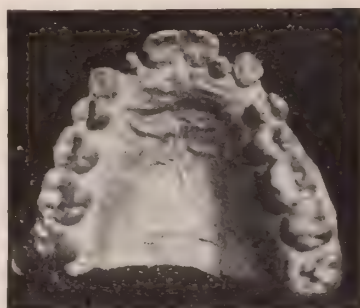


Fig. 50

Fig. 49. A case in which several small supernumerary teeth crowded together had blocked the way and caused the impaction of both themselves and the central incisor. The covering of bone has been dissected away to show the position of the impacted incisor. This skull was obtained from the curator of the museum of the University of

Pennsylvania, and prepared, photographed and reported by Dr. E. C. Kirk, *Dental Cosmos*, Vol. 40, Page 283.

Fig. 50. A case of conical lateral incisors of the normal set, introduced here as a reminder that care is necessary in the diagnosis of conical supernumerary teeth. Occasionally the normal lateral incisors take this form, and it would be an ugly error to remove them, believing them to be supernumerary teeth.

NINTH GROUP—BROKEN CONES AND MULTIPLE CONES. FIGS. 51-59.



Fig. 51

Fig. 52

Fig. 51. Photograph, one-third larger than normal size, of the tooth, the first one spoken of in the text as having been extracted for a young girl six years old, in the position of the right central incisor. A linguo-occlusal view. This broad, blunt, ragged end is typical of the very large broken cones, though a few are found to be much smoother. The smaller broken cones often have smoother ends. By the term broken cone is not meant that the cone is actually broken, but only that the point of the cone seems not to have been formed.

Fig. 52. A cast of a case in which a large broken cone has remained in position till adult life, the normal central incisor remaining impacted in the bone.

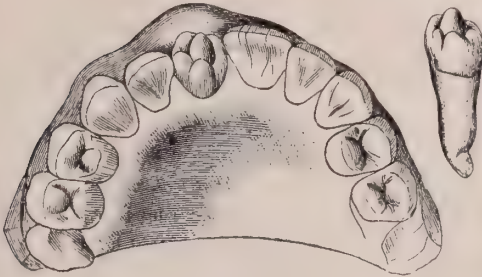


Fig. 53

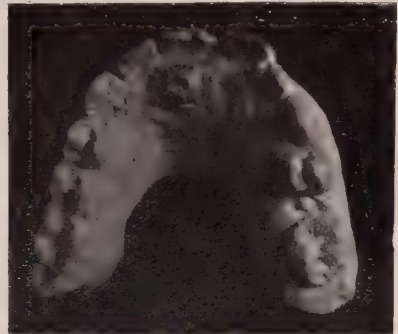


Fig. 54

Fig. 53. A multiple cone in position and after extraction. In the case it is seen that the normal incisor has been deflected to the labial but has not erupted. The multiple cones are certainly very rare. The author has met with but two. *Dental Cosmos*, Vol. 25, Page 615, C. B. Knowlton.

Fig. 54. One broken cone to the lingual of the incisors.

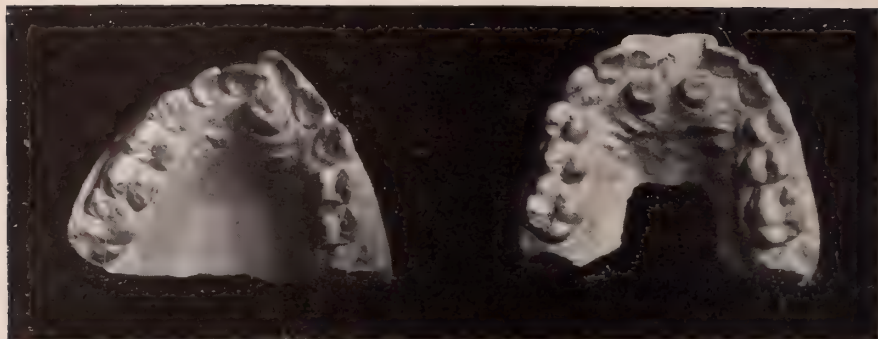


Fig. 55

Fig. 56

Fig. 55. One broken cone to the lingual of the incisors.

Fig. 56. A cast showing two small broken cones to the lingual of the incisors. The edges of the central incisors were broken by accident before the photograph was taken.

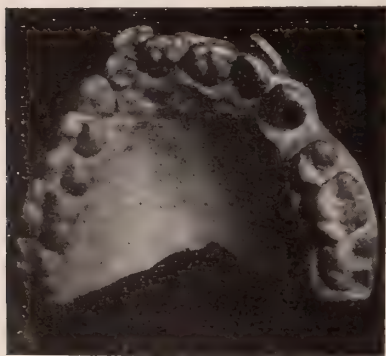


Fig. 57



Fig. 58

Fig. 57. A cast showing two rather large broken cones that have taken the place of the central incisors which have been forced to either side and to the labial of the normal lateral incisors. It should be noted that in this case the bicuspid and second molars are in position, showing that the case has been neglected until the deformity has become permanent. It is an ugly case, and represents fairly the ordinary results in this class of cases when neglected.

Fig. 58. A figure illustrating two excessively large broken cones in place of the normal central and lateral incisors. These latter teeth are thrust far to either side, as is common in other similar cases. The very large size of the teeth in this case increased the deformity. In this case the supernumerary teeth have looked so much like molars that they have been described as transposed molars. This is evidently an error. It is much more probable that some of the molars that seem to be lacking, are impacted, or never were formed. A comparison of this case with Fig. 57, especially the position of central and lateral incisors, which in both cases are pushed far toward the angles of the arch, it will be seen that in the two cases the deformity is very similar. *Dental Pathology and Therapeutics*—Burchard, 1904, Page 229.

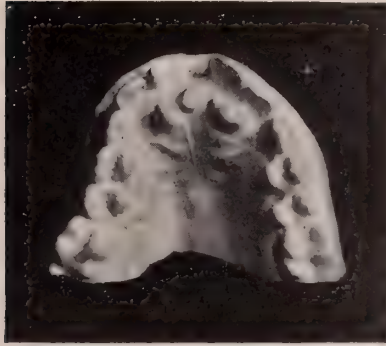


Fig. 59

Fig. 59. Three small broken cones to the lingual of the normal incisors. When such teeth are large, which they sometimes are, they make general havoc of facial expression.

TENTH GROUP—SUPERNUMERARY MOLARS. FIGS. 60-64.



Fig. 60



Fig. 61

Fig. 60. One supernumerary tooth of rounded form, much over-filling the lingual embrasure between the first and second molars. *Preiswerk's Atlas and Text-book of Dentistry*, 1906, Page 181.

Fig. 61. One supernumerary tooth in the buccal embrasure between the second and third upper molars.

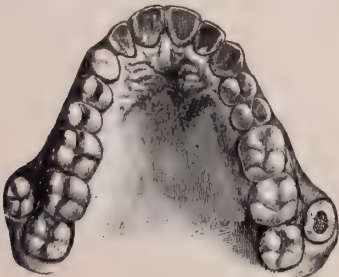


Fig. 62

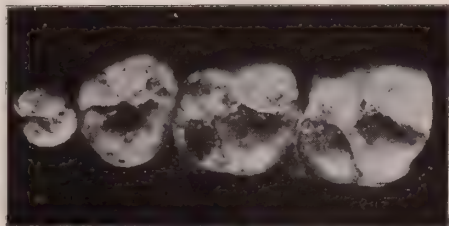


Fig. 63

Fig. 62. Two supernumerary teeth, one to the buccal of the second and third molars on either side. *Dental Cosmos*, Vol. 33, Page 1124.



Fig. 64

Fig 63. Four upper molars extracted for one patient, the fourth being to the distal of the third molar. This is apparently a small supernumerary tooth.

Fig. 64. Four molars of normal form on either side of lower jaw. *Dental Pathology*, Wedl, 1872, Page 102.

ELEVENTH GROUP—SUPERNUMERARY TEETH FUSED WITH NORMAL TEETH. FIGS. 65-68.



Fig. 65

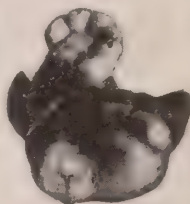


Fig. 66



Fig. 67



Fig. 68

Fig. 65. A supernumerary tooth attached to a normal molar tooth by cementum. Nearly a distal view. In this case there is marked hypertrophy of the cementum.

Fig. 66. The same case as Fig. 65, showing an occlusal view.

Fig. 67. Two conical supernumerary teeth attached to the buccal side of a first molar by fusion of the cementum. The distolingual surface.

Fig. 68. An occlusal view of the case shown in Fig 67.

TWELFTH GROUP—GEMMAE. FIGS. 69-77.



Fig. 69



Fig. 70

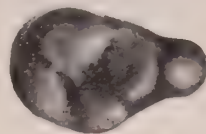


Fig. 71

Fig. 69. A small conical supernumerary tooth the root of which has united with the root of the lower bicuspid tooth, giving the appearance of a bud that has put out from the bicuspid root. As a fact, however, the crowns of the two teeth have begun separately and their dentin germs have united. Nearly a lingual view.

Fig. 70. An opposite view of the case shown in Fig. 69. In the extraction of this the crown of the bicuspid tooth was broken. The wonder is that the small attached tooth was removed without breakage.

Fig. 71. A small conical supernumerary tooth attached to the mesio-buccal angle of an upper first molar. It has no root of its own, but is attached to, and forms a part of the root of the molar tooth.



Fig. 72



Fig. 73



Fig. 74

Fig. 72. A gemma attached to the disto-buccal root of an upper first molar. A very fine specimen of this class of supernumerary tooth.

Fig. 73. A bucco-occlusal view of the specimen shown in Fig. 72.

Fig. 74. A gemma the roots of which have grown together with, and form a part of the buccal roots of a molar tooth. In this case the supernumerary tooth shows some root formation, but none of these end independently.



Fig. 75

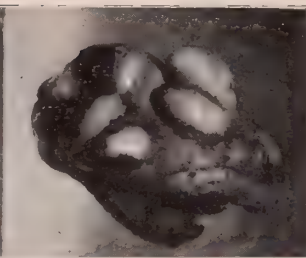


Fig. 76

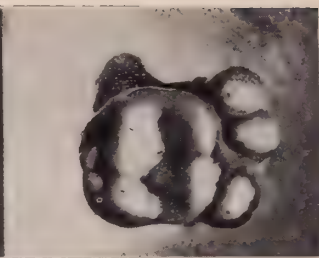


Fig. 77

Fig. 75. Another case very similar to that shown in Fig. 74 in which the roots of the supernumerary tooth and of the molar tooth have united, forming a common root canal and apical foramen.

Figs. 76 and 77. A bucco-occlusal view, and an occlusal view of a case in which three conical gemmae are attached to the buccal roots of an upper molar. From the general appearance of this specimen it would seem that each of these attached supernumeraries has its own pulp chamber, uniting with the pulp chamber or root canals of the molar tooth.

THIRTEENTH GROUP—DICHOTOMES. FIGS. 78-90.



Fig. 78

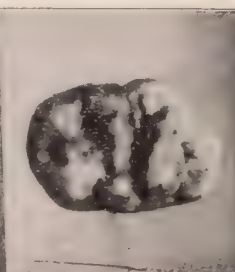


Fig. 79

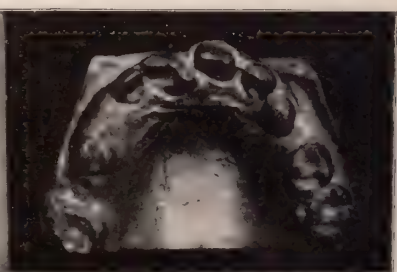


Fig. 80

Figs. 78 and 79. A view of the lingual surface, and of the occlusal surface of a dichotome formed by the union of a large supernumerary tooth with a lower molar. The pulp chamber was found to be common to the two united teeth, making it a true dichotome (two fold) tooth. Notice also that in Fig. 78 there is an enamel drop on the side of the tooth's root. This picture is about one-third larger than the tooth.

Figs. 80, 81, 82, 83 and 84 represent one case with the results of treatment.

Fig. 80. is an occlusal view of a cast of the upper jaw at the time the permanent incisors were taking their places in the arch. In this it will be noticed that one of the central incisors is a dichotome, is large, and the incisal edge is badly notched. No treatment was undertaken at that time.

Fig. 81 is from a cast of the same mouth some years later, when the permanent teeth—except the third molars—had taken their places in the arch. It will be noticed that in this a supernumerary lateral incisor has forced its way into a position between the normal central and lateral incisors on the opposite side from the dichotome. This is properly a case of two supernumerary lateral incisors, only that the one has been folded onto the central incisor, while the other is free in its own socket upon its own root. The proper treatment for the latter would have been to extract it as soon as its presence was discovered, trusting to the normal formative power of the arch to correct the position of the other teeth.



Fig. 81

Fig. 82

Fig. 82. Shows the occlusion at the time the second cast (Fig 81) was made. In this it will be noticed that the broadening of the upper arch by the crowding of the supernumerary lateral incisor between the other teeth, has carried the lower arch with it, because of the intercusping of the lower teeth with the upper, separating the lower incisors. Notice, also, that in the occlusion, the lower incisors fall into the notch in the dichotomous central incisor.



Fig. 83

Fig. 84

Figs. 83 and 84 illustrate the treatment employed. The crown of the dichotomous central incisor was cut away and an artificial crown of normal form placed on the root. In doing this it was found that the tooth had but a single pulp canal. The supernumerary lateral incisor was treated in a similar way.

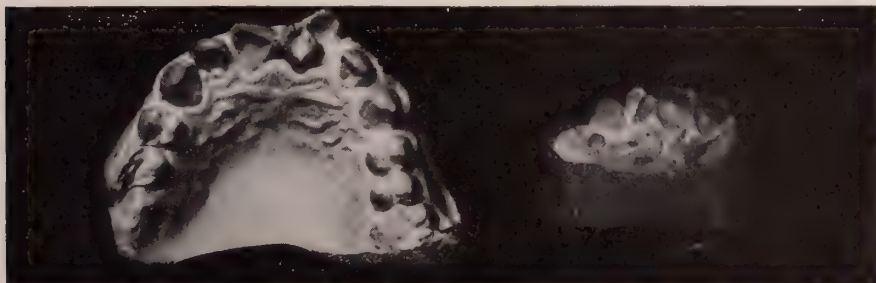


Fig. 85

Fig. 86

Fig. 84 shows the occlusion after this treatment. The teeth are parted a very little to show the lower teeth better. It leaves the case with one supernumerary lateral incisor in the line of the arch which is undesirable, because, to many persons, it gives an impression of something not quite normal, yet the improvement is so great as to commend it very highly.

Fig. 85. A cast of case showing a dichotomous central incisor—a very large misshapen tooth formed by the folding of the enamel germ of a supernumerary tooth, upon the normal central incisor.

Fig. 86. A cast showing a dichotomous lateral incisor formed by the folding of a supernumerary tooth upon its crown with a common pulp chamber and root canal.

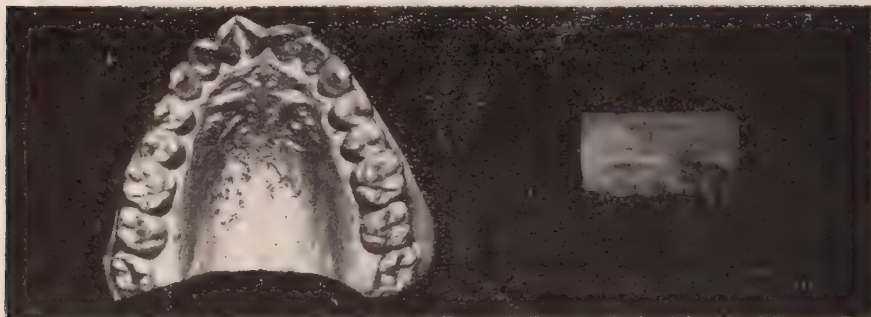


Fig. 87

Fig. 88

Fig. 87. A case in which the left central incisor, as it stands in the illustration, has another incisor of nearly normal form united with its crown. From careful examination in the mouth, the two-tooth crowns seem to have a common root and pulp canal, with a bifurcated pulp chamber in the crown portion.

Fig. 88. A dichotomous lateral incisor in the deciduous set of teeth.

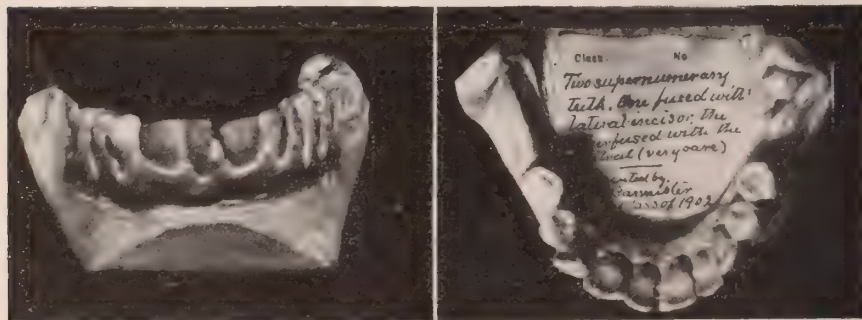


Fig. 89

Fig. 90

Figs. 89 and 90. Show a labial view and an occlusal view of two dichotomous incisors in the lower jaw, formed by the folding together of supernumerary enamel germs with the germs of the normal lower incisors, the one with a lateral, and the other with a central incisor. This is so smooth that no line of junction can be seen on the labial surfaces, the teeth closely resembling upper central incisors in form. But on the lingual surfaces a line of junction is clearly seen when the teeth are examined in the mouth. This condition creates a deformity which is practically irremediable, for the roots of these dichotomous teeth are so large that if artificial crowns of normal size were placed upon them, they would stand widely apart from the other teeth.

quent of these are those cases in which supernumerary teeth are fused to normal teeth or other supernumeraries by both the enamel and cementum through most, or all, of their length; but which seem to be essentially separate teeth with separate pulp chambers. This occasionally occurs between two normal teeth also. No term has come to me to express this except the "twin teeth," which has been so widely used to express any kind of union of two teeth that it becomes inappropriate.

While this by no means exhausts this class of deformity, it is, perhaps, sufficient to say at the present time. I can do much more with pictures than with words to give information of these things. That which we most need now is that practical acquaintance with supernumerary teeth that will properly direct treatment; for this I will depend mostly upon the illustrations. But I wish particularly to urge every one who has the interest of his profession at heart, to be careful of the odd things that may come to him in his practice. When cases of supernumerary teeth or any deformities of the teeth are presented that can be represented in that way, take an impression, a good one, and make a cast, or two or three, of plaster with no kind of varnish or dressing; write the best description you can and send it to a museum, where it will be taken care of and used in teaching. If you extract a tooth that is out of form in any way, save it carefully and place it where it will do most good. Generally such things are kept in the pocket as curios for a time, then lost, and the world has lost a valuable aid in the advancement of science and in the forming of plans for the relief of the ills of our people.

DISCUSSION

Dr. C. M. Wright, Cincinnati, Ohio: If you should ask the average practitioner and student of the science of dentistry to tell what he knows about supernumerary teeth, what would he say?

Before replying I think he might try to recall what scraps of knowledge about these teeth he has picked up at odd times by personal observations and readings. Dr. Black is right when he says that in recent years this subject has been sadly neglected. I shall have to confess that the fragments labeled "Supernumerary teeth," which have been cast into obscure corners in the attic of my brain, are meager and useless.

After daily practice in America and Europe, extending over a period of say 40 years, I find very few pictures in my mind of supernumerary teeth. An occasional "extra" tooth, a "peg-tooth" in the incisor region, between the superior centrals or behind a lateral, also, of an extra tooth as a twin of the Siamese kind, cemented to an inferior lateral, or to a superior central. Here I find a picture of *three* bicuspids where *two* would be numerically normal. Then, a superior atypical fourth molar in the neighborhood of a normal *third molar*. Some of these pictures have been duplicated, as in a parent and in a child.

These freaks have presented themselves just often enough as the years have rolled along for me to be able to recognize this *one fact*, viz: That pathologically typical and physiologically atypical phenomena do occur in the development of a set of human teeth.

Beyond this I have no knowledge.

How certain epiblastic cells manage to steer themselves out of the beaten track made for them by some type-regulating force, and how they after a while meet vagrant mesoblastic cells in a papilla, and proceed to build an extra tooth, with the enamel, dentin,

cementum and pulp in normal relation to each other, is strange. But it is really no more wonderful than that the typical or so-called normal and natural organs, features and forms of man should appear so regularly, when we consider the incalculable generations of evolutionary and karyokinetic cell changes which have contributed to the final results which we see daily. The wonder of all is that anomalies, like monsters and other deformities, are not more common and that misbuilding is not the rule rather than the exception. Herbert Spencer in his *Principles of Biology* gives philosophic reasons for the growth, development and other biologic functions of organic matter. He tries to show the relations of protoplasmic cells, (soft colloid matter) to external forces and to heredity, and to explain their reactions upon and correspondence with these forces. He recognizes as you know, such variations in development, as the substitution of organs, rudimentary organs, the suppression of organs, and the reappearance of former types of organs. He claims that these variations themselves furnish a substantial proof of the fact of Evolution and form important proofs for the hypothesis. Darwin preceded Spencer in laying stress upon the importance of the fact of variation in the development of all living things.

It is an extremely interesting study and can be, no doubt, nicely applied to an hypothetical explanation of the erratic conduct of Supernumerary Teeth.

Every teacher and student of General Pathology recognizes the fact that congenital abnormalities of development may occur in nearly every organ and tissue of the body, in the skull and brain; in the mouth and nose; in the heart and intestines; in the skin and bones; in the jaws and teeth; and that dermoid and dentigerous cysts are not so very uncommon. Now, while we may have philosophical theories, physiological reasons for these changes from what we regard as normal have not been made sure and definite, especially in individual cases.

Theories about cretinism, about giantism, about acromagalia and the relation of these anomalies to some faulty functional play of the Thyroid Gland, the supra-renal capsules and of the Pituitary Body have been advanced.

Sejour has recently followed some fine experiments to establish the fact that there is an intimate relationship existing between the circle formed by these three ductless glands, viz: The anterior lobe of the Pituitary, the Thyroid and the Adrenals. He attributes to these glands (this circle of glands) a power of controlling and directing the moulding into their respective types, of distant organs and tissues by their action upon the blood which courses through their meshes. Toward these bodies, the functions of which have for so long a time been shrouded in mystery, the Physiologist of today has turned his searchlight. He is beginning, through observations of pathological departures, to suspect the existence of inhibiting and accelerating impulses emanating from, or passing through these bodies, which tend and control and regulate cellular evolution by affecting metabolism and growth. Dentists may come, before long, to look to the *Pituitary* in its posterior or anterior lobe, for a cause of irregularities, malformations and anomalies and misbuildings of the teeth and jaws.

This enlarges our scope of etiological factors, which is now apparently bounded by theories about mouth breathing and respiratory obstructions like hypertrophied tonsils adenoid growths, closed Eustachian tubes, deflections of nasal septae and "spurs." It will enrich the rapidly growing art of Dental Orthopedics.

Neurologists are turning their attention to Biology, and seeking in Embryology reasons for the abnormal in brain structure and function.

They recognize as must the dentist that in the egg cell just after it has started on its growth to produce a new member of the species, that equivalent and equal amounts of a certain element of the cell are derived from both the father and the mother; that these two equal and equivalent maternal and paternal elements are woven together, and by a most intricate process distributed in equivalent amounts to every cell in the whole body. Upon a wider knowledge of the life history and genealogy of the cell and of

this intricate process of distribution and building of tissues must we found our hopes of a final discovery of reasons for variations in morphology.

Zoologists have studied the modes of evolution of the teeth, especially of the complex crowns of the molars of Mammals. They have tried to show how the main types of cusps originated—by comparing them with the cusps on teeth of fossils and of more recent animals in the historical scale. They have built hypotheses regarding the acquiring of a type of tooth. The persistence of accidental variations has been considered, as well as the modifying effects of a change in environment—change in food affecting function.

We must most heartily agree with Mark Twain when he says, "*There is something fascinating about Science. One gets such wholesale returns of conjecture out of such a trifling investment of fact.*"

Dr. Black has always given freely of his large investments in facts. This lecture which we have listened to tonight is in evidence of the truth of this. And it will live as an authority in the Natural History of Supernumerary Teeth forming a wholesale collection of facts upon which to build etiological facts, and not mere suppositions.

As a matter of curiosity I consulted some of the older authors who have written upon the science and art of the dentist. With them have I beguiled many a pleasant hour; to them have I turned when a wave of discontent or discouragement, or pessimism comes my way and threatens to overwhelm me. I owe much of my respect for our specialty to the scholarship and science of these old writers, as well as to the energetic labors of our most advanced investigators of today. I formed the acquaintance of these old writers when I entered on the "study" of Dentistry, and they are friends today. Hunter, Jourdain, Dural, Delabare, Deserabode, Fauchard and later writers like Harris, Wedl, Tomes, Salter, Oakey, Coles, and so on down to the present. John Hunter, who exhibited an extraordinary mind, and who startles his reader by conclusions about anatomical and physiological observations, the process by which they were reached being scarcely discernable, told of Supernumerary teeth in the aged about 150 years ago.

Diserabode discussed the case of a servant of Geoffrory physician to the Hotel Dieu who had a double range of teeth, forty in all. Wedl, after describing supernumerary teeth enters minutely into the study of supernumerary roots of teeth.

Harris divides extra teeth into three classes, a geminous or fused teeth, supplemental teeth (these are teeth of good form and only numerically phenomenal) and true supernumerary teeth (these being atypical in form.)

He and some other authors also declare that supernumerary teeth are "less liable to decay."

Now, I have tried to show what the average dentist would say, if he were asked to tell what he knows about supernumerary teeth. You see the result.

When Dr. Hunt honored me by asking if I would discuss a paper by Dr. Black I accepted at once. Not because I knew a thing about supernumerary teeth, but because I was glad of the opportunity of publicly expressing my life-long indebtedness to Dr. Black for what he has done for me, by his written papers and spoken lectures, and special articles, and books, and for what he has done for the profession to which we are giving the best parts of our lives. Every man in this hall, and every man in this state and in this country and every man in the entire civilized world who has ever prepared a cavity in a tooth, or manipulated gold foil, or amalgam, or studied dental morphology, or taught pathology, general or special, would say the same if Dr. Hunt had offered him this chance. He would give voice to his appreciation of the precise and comprehensive scientific labors of Dr. Black.

Every dentist in the world today, whether he is a student or not, and whether he reads or not, is practicing every day on principles that were taught by and given to the profession by Dr. Black. Each one of us is branded, indelibly branded in his brain, and in his hand, with the "Black" mark—and we thank him for it.

Dr. H. B. Tileston, Louisville, Ky.: Dr. Black has made a classic presentation of the subject of supernumerary teeth; one which will take a position with many others of his scientific works, as an authority to which the seeker after information will turn to find all that is known upon that subject.

Writing and even references to supernumerary teeth are quite rare and exceedingly meager in the matter of real information, and such as have appeared, scattered through the dental literature for many years, have all been gathered up by Dr. Black. Such a treatise as he has presented has never been known until now. Hence it is useless to attempt to add anything to this splendid paper, especially as I have never made any original investigations upon which to base opinions that might be opposed to those advanced or supported by Dr. Black, as to the origin of these anomalies.

In my study of dental embryology I have readily accepted the rather casual statement that the whorls into which the neck of the epithelial cords breaks up when it separates from the enamel organ of the forming tooth, occasionally germinate and form supernumerary teeth, as being quite satisfactory, since it is known that the germinating cells of tooth development are the infant cells of the epiblastic layer of the blastoderm. Dr. Black's statement that they sometimes originate also directly from the lamina, must likewise be accepted, since he has proven this to be a fact.

Neither is it difficult to accept the theory of Dr. Dean, quoted and indorsed by Dr. Black, that the epithelial cells are capable of exciting the development of a dental papilla in the connective tissue cells of the mesoblast. The evolution of a dental papilla is always coincident with the growth of the enamel organ but does not constitute a separate and distinct set of phenomena, which are only such as are induced by the vital activities of the epithelial cells themselves.

As to nomenclature, Dr. Black's suggestion of the word "dichotome" or "dichotomous teeth" to express the union or fusion of two enamel germs in a manner different from the gemmae, is, as he confesses, not precisely what is wanted. The word really means to cut into halves or pairs, while the idea sought to be expressed is the union of two things. I have thought of the word "dicho-morphodont" meaning two tooth forms, and also of "dicolonodont," meaning two tooth members, the word "dicolon" meaning "having two members." But neither of these terms conveys the idea of a fusion or union of the teeth.

After all, a word adopted as a scientific term need not be too critically scrutinized as to its etymology, if it is generally accepted to mean a certain thing or condition and is always so used, provided it is one that has not already been applied to designate something else. The term "dichotome" once it becomes generally recognized to mean a tooth formed by two enamel germs, is etymologically significant to a sufficient degree to make it acceptable. Dr. Black's suggestions as to practice in the treatment of cases of supernumerary teeth, and his warning as to the attempted removal of a supernumerary which might prove to be a gemma or a dichotome, are wise and timely. While these cases are not very frequent, they are yet not so rare but that any one of us might at some time be brought to a point of decision when this advice would be of the greatest value to us.

About the time I was notified that I was to take a part in this discussion I was much interested to read an account of the restoration by Prof. Henry F. Osborne, curator of vertebrate paleontology at the American Museum of Natural History, N. Y., of two specimens of trachodon or duck bill dinosaur which flourished in Montana some three or four thousands of years ago. The queer shaped creature is over thirty feet long and its monster head, four feet long by two wide, contains in its jaws over two thousand teeth. My first thought upon perusing this last item was that I had discovered something that Dr. Black had overlooked, but upon further reading I found that none of these numerous teeth were supernumeraries.

In addition to the great value of Dr. Black's paper as a contribution to the

literature on supernumerary teeth, it will doubtless have the immediate effect of stimulating the profession generally to note and to preserve these and other abnormalities that occur in practice. The doctor himself has always been a close observer and his remarkable foresight and systematic methods have enabled him to gather stores of valuable things that he can draw upon when needed to produce such papers as the one we have just listened to.

We all encounter interesting abnormalities and the thought occurs to us that they ought to be preserved but we let the opportunity pass, reflecting doubtless, that two or three specimens do not constitute a collection. But several specimens from many sources gathered together in a college museum will constitute a collection of inestimable value. It is to be hoped that the essayist's plea for effort in this direction will be generally heeded.

Dr. W.H. DeFord, Des Moines, Iowa: This is a very interesting and important subject, and has been presented as only one man in the world could present it. I have seen a great many of these cases, and have operated on quite a number of them also. I have seen some very interesting cases of supernumerary teeth. This one is of a supernumerary cuspid tooth. The patient thought it was a fish bone sticking in the gums, and a dentist removed it and found as perfectly formed a cuspid as you have ever seen, but it is necessary to use a magnifying glass in order to see it. Dr. G. V. I. Brown has a fine collection of these supernumerary teeth, one of which lies horizontally across the nares. A physician in Cedar Rapids, Dr. Carpenter, has a large ovarian tumor, which was removed and in which you can see two perfectly formed cuspids and two perfectly formed molars; and there is a specimen in the College of Physicians and Surgeons of Baltimore, which they used to bring out when I was a student of medicine, a dermoid, which, when removed, weighed one hundred and ten pounds, and inside of this are a number of toe nails, finger nails, teeth, hair, etc., these all growing from the same tissue. Sutton, in his book upon tumors, shows a picture of a sheep in which there is a supernumerary tooth growing in the ear.

Dr. G. V. Black, Chicago, Ill. (Closing the discussion)—Perhaps I should apologize for taking so much of your time. I was not conscious that I took so long a time, and I am sorry, but from the number of people here you must have been interested or you would not have stayed so long. My presentation has not exhausted this subject; there are many things to be said, many things in a scientific way, but my principal thought was to interest the dentist from the practical standpoint. I think we should be able to recognize these things when we meet them and be able to treat them correctly. I believe people should have services on demand. That is the important thing from the practical standpoint. From the standpoint of the scientific, there are yet many things to be discovered along this line. We have these teeth growing in dermoid cysts, growing in what seems to be a foreign field.

THE man who counts is not the man who dodges work, but he who goes out into life rejoicing as a strong man to run a race, girding himself for the effort, bound to win and wrest triumph from difficulty and disaster.

—Theodore Roosevelt

PORCELAIN AND GOLD INLAYS

By A. W. Starbuck, D. D. S., Denver, Colorado

Superintendent of Infirmary, Colorado College of Dental Surgery

(Continued from page 18 January Dental Summary.)

INCISAL RESTORATIONS.

IN considering cavities involving the incisal third of the six anterior teeth, it might be well to divide them into two classes: First, fractures; second, atrophied teeth.

In fractures, the teeth may be broken diagonally or almost at right angles to the long axis of the tooth. In either case, the labial margins should be cut at right angles to the long axis of the tooth. If the break does not involve both angles, as in Fig. 22, the margin should be cut away as shown in Fig. 23, or if the fracture is at a greater angle, the surface



Fig. 22

Fig. 23

Fig. 24

may be stepped, as in Fig. 24. This method of preparation will be much less conspicuous than where the margin is at an angle.

Porcelain "tips" are very disappointing in many cases, especially where they involve the entire incisal edge. We may have a perfect match for the color before cementing, and there may be no apparent change in the color of the porcelain after cementing to place, but the shadow caused by the tip and cement will cause the remaining portion of the tooth to turn dark and be decidedly unsatisfactory during ordinary conversation. If there is an approximal cavity which can be included in the restoration, this trouble does not seem to appear.

In large cases, involving more than the incisal third, it is preferable to follow the method suggested for badly atrophied teeth.

The retention for fracture cavities may be formed by cutting away the dentine to a depth equal to the extent of the fracture, as in Fig. 25. This extension for the retention is done with an inverted cone bur, followed with a smooth fissure and all walls should be parallel to each other.

In cases where there is danger of encroaching upon the pulp by using the above method, the procedure may be reversed, the enamel and a small portion of the dentine removed, as in Fig. 26. If these methods do not seem

to give sufficient anchorage, or the tooth is broken well up on the lingual, the cavity should be extended sufficiently on the lingual to gain the required retention, Fig. 27.

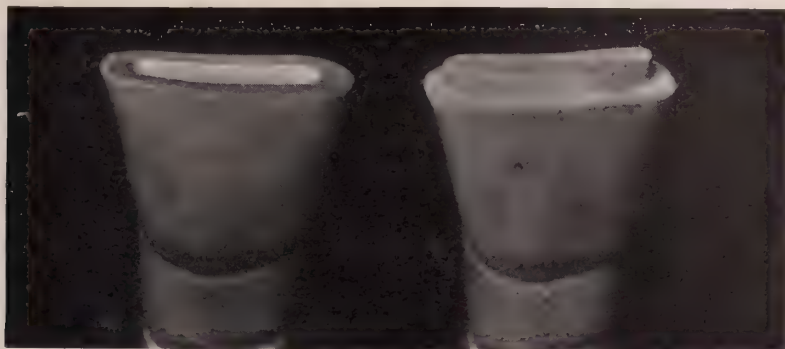


Fig. 25

Fig. 26

With the exception of very large, thick restorations, pins are contraindicated as they so weaken the porcelain that it is sure to fracture at this point.

In atrophied teeth the labial margins should be extended gingivally sufficiently to reach the normal contour of the tooth, otherwise the inlay will be noticeable. If this extension does not go beyond the incisal third the retention may be formed the same as in fractures. If the defect is in the middle third of the tooth, it is advisable to remove the entire labial surface on account of the objectional changes of the gingival third. First remove the enamel with carborundum stones, then shape with inverted cone burs.

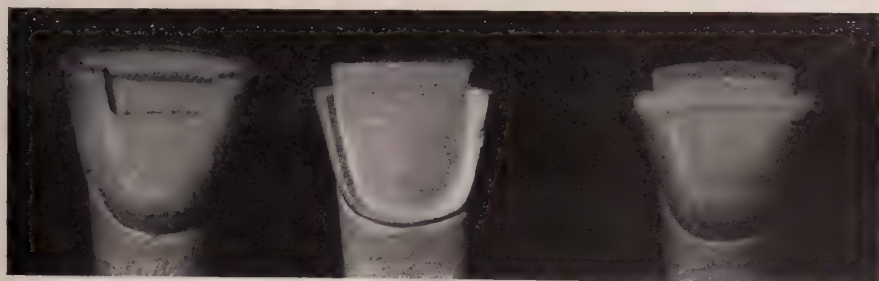


Fig. 27

Fig. 28

Fig. 29

extending it to the free margin of the gums and well to the mesial and distal, Fig. 28 (mesial) Fig. 29 (distal). The porcelain should form the contact point with the approximating teeth, otherwise there would be danger of recurrence of decay.

THE MATRIX.

Both platinum and gold foils have their advantages as a matrix material. While gold can be used only for low fusing porcelains, it has the advantage of close adaptation to the margins of the cavity, thus making a better fitting inlay with less burnishing. It has the disadvantage of becoming very

soft when subjected to the heat of the furnace, thus necessitating the careful investing of the matrix before baking. For this reason platinum is becoming more popular daily. There are three thicknesses of platinum foil upon the market ordinarily, 1-1000, 1-1200 and 1-2000. The thicker foils are more commonly used, the 1-1200 being preferable to the 1-1000. This foil is slightly thinner and is sufficiently rigid to withstand the manipulating of the porcelain without changing the shape.

It is not necessary to anneal platinum foil before using. As a rule it is much softer as it comes from the manufacturer than we can possibly make it without subjecting it to high temperatures in the furnace.

GINGIVAL CAVITIES.

If we have prepared our cavity after the lines suggested in the previous chapter, it will be found to be very difficult to force the matrix to the bottom of the cavity without tearing. To facilitate matters it is an excellent plan to first shape an orange wood stick to loosely fit the cavity, as shown in Fig. 30. Over this the platinum is roughly formed, Fig. 31, care being taken



Fig. 30

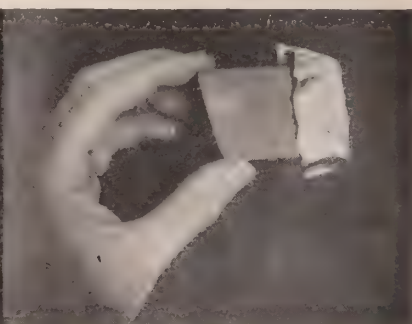


Fig. 31

to avoid large folds in the foil. If the stick has not been too large the foil will drop to the bottom of the cavity without a bit of pressure having been brought to bear upon the thin foil. Next, place a pellet of moist cotton in the bottom of the matrix thus formed and with one burnisher hold the matrix to place against the floor of the cavity while with the other carefully burnish, starting at the center of the floor and gradually working towards the walls of the cavity. At no time allow the burnisher to touch the platinum. always have an intervening cushion of damp cotton. The matrix should be adapted to every portion of the floor of the cavity before any attempt is made towards the walls or margins. The final burnishing is done along the margins and on the surface of the tooth.

At first thought you would think the folds, formed in shaping the matrix over the stick, would remain in the finished matrix, however, if it is carefully done every one will disappear as the burnishing proceeds.

After the burnishing is completed the matrix should be packed full of camphor gum (Dr. Allen) letting it extend slightly beyond the margins. This

will tend to remove any rocking that may be present. After teasing the matrix from the cavity, the camphor may be burned away leaving the matrix clean and in normal shape.

SIMPLE APPROXIMAL CAVITIES.

The orange wood stick is equally of value in these, as it was in the gingival cavities. In the first case the end of the stick was fitted to the cavity, while in this the side is used, as in Fig. 32. The platinum is shaped over one side, the two edges and the end of the stick, as in Fig. 33. On account of



Fig. 32

Fig. 33

Fig. 34

the approximating tooth it is necessary to bend the edges of the platinum forming a flange around the matrix. In this manner the matrix readily goes to place even though there is but little separation. Fig. 34. The matrix is then filled with damp cotton and burnished to place, starting at the deepest part of the cavity and gradually working towards the margins. After this is accomplished any rocking of the matrix may be removed by stretching



Fig. 35

Fig. 36

Fig. 37

damp English twill tape tightly over the matrix, or better still, use a heavy rubber band stretching this over the entire matrix and burnishing over this sufficiently to bring the platinum finally against the tooth.

If it is necessary to trim the matrix that it may be removed easily, it

should be done before the final burnishing, then replaced and burnished, using the rubber band.

CAVITIES INVOLVING THE INCISAL EDGE

Ordinarily the most difficult matrix to form without tearing, is one for step cavities. But by carefully carrying out the following instructions it will be found very simple and in the step where folds are so annoying there will not be a wrinkle.

In shaping the orange wood stick, one side, the end and one edge are used, as in Fig. 35. Over this the platinum is shaped, as in Fig. 36, again bending the edge of the platinum back in the form of a flange in order that it may pass freely between the teeth.

Place in the cavity and pack with cotton and burnish carefully into the deep portion of the cavity, being careful not to permit the platinum folding over on the labial surface. It should stand perfectly parallel with the labial margin. With a pair of cotton pliers gradually bend the matrix into the step, Fig. 37. With a flat burnisher adapt closely to the labial wall and in the step, then with the same burnisher carry the surplus on the labial wall

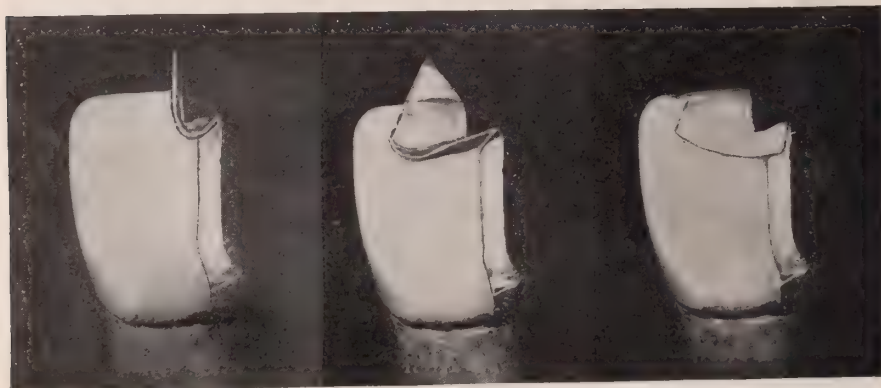


Fig. 38

Fig. 39

Fig. 40

to place, Fig. 38. Next carry the approximal portion of the step to place, Fig. 39, and finally fold back the portion covering the gingival of the step, Fig. 40. This fold in the platinum stops at the cavo-surface angle, consequently it does not interfere with the adaptation of the inlay. Burnish over the lingual margin carefully and use the rubber band as in the preceding case.

(To be Continued.)

If you cannot help the men who are doing the world's work, if you cannot lift so much as a pound of the load they are carrying, you can, at least, abstain from hindering. Don't get in their way; don't criticise, unless you know you can do better than they are doing; don't grease the track; don't put tacks on the boulevard. Stand around if you must, with hands in your pockets, reaping where others have sown, but don't try to stop the sowing. It will be the curse for you if you do.

MAKING INLAY RESTORATIONS BY THE ARTIFICIAL STONE METHOD *

By Weston A. Price, D. D. S., M. E., Cleveland, Ohio

The patient presented had a large number of gold inlays several of which were very large contour restorations involving the occlusal and proximal surfaces of bicuspid and molars. These gold inlays had been made and polished on the artificial stone devised by the writer in the following manner: Those involving the proximal and occlusal surfaces of the adjoining bicuspid and molars were made at once by preparing the cavities in both of the approximating teeth so that the impression would draw without distortion in taking both at once. The preparation was done chiefly with slightly tapering cross-cut fissure burs. The impression was taken in a special tray with a septum passing between the teeth to preserve the impression wax from distortion. The best impression wax available is that devised by the writer and being made by the firm making the artificial stone. The impression wax requires to be of a quality that will take a sharp impression and chill hard under a stream of cold water and be free from inorganic

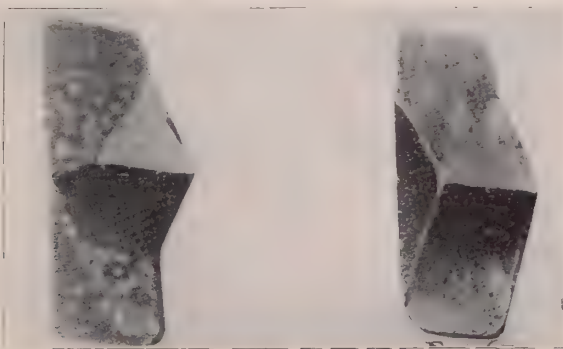


Fig. 1

matter that will not burn off the model perfectly clean. Two trays suitable are shown in Fig. 1.

The artificial stone is mixed with its liquid, phosphoric acid, to a consistency like butter when it spreads nicely, and is placed in the impression with the special inserting spatula and allowed to set for an hour or two, or if convenient, over night. The stone does not set hard until it has been baked to a dull red heat, which is done after slowly melting off the wax with dry heat, which process hardens the model.

If only one proximal cavity is to be filled it is cast against the contact point of the adjoining tooth after that contact point has been polished off about four thousandths of an inch to leave extra gold for polishing and for pressure contact when inserted.

*Detailed report of Clinic, given at Ohio State Dental Society, Columbus, Ohio, Dec. 1908.

In the case where two proximating surfaces are being restored the stone model is placed in a special micrometer articulator, Fig. 2, when made and after the wax is melted off it is removed from this articulator and separated by fracturing through between the teeth being filled. The teeth are restored to their normal shape by melting wax into the cavities and carving it to shape and then they are restored to their normal relation in the micrometer articulator and the contact point compressed and corrected to allow of about two thousandths of an inch on each surface for polishing off

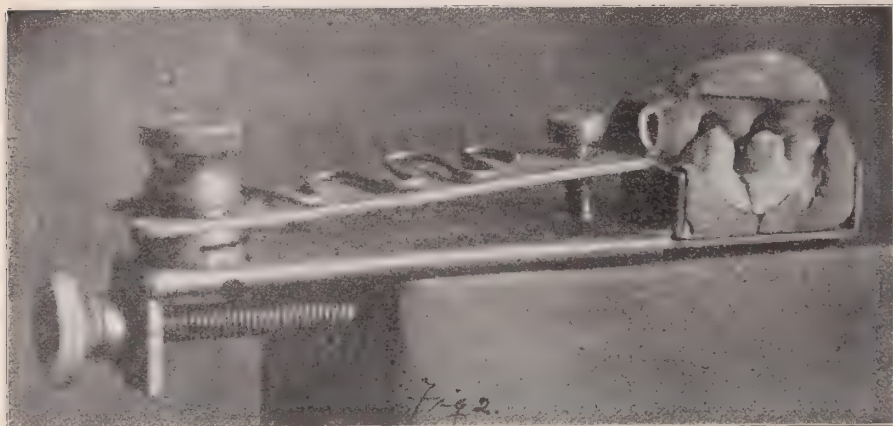


Fig. 2

the gold and two thousandths on each for contact pressure, making eight thousandths additional space between the teeth. The occluding surfaces are also exactly determined by the antagonizing model also mounted on the articulator in correct relation. The wax models are now attached to the sprue gate and invested in the cup, model and all, and after melting out the wax the gold is cast directly into the stone model cavity and is not removed until it is completely polished as though it were in the tooth in the mouth. It is finally placed with its proximating inlay and model back in the micrometer articulator and the contact corrected to about four thousandths total additional pressure for contact pressure when placed in the teeth. Several of the fillings shown were made and finished in this way and neither the contact point nor the occlusion had required changing when taken to the mouth, and were shown to be very perfect. Some of the simple occlusal cavities shown were made by fusing pure gold directly into the cavities without casting by first lining the cavity and margins with gold and platinum filling foil and with the blow pipe fusing the pure gold into it. These were finished directly upon the model and when inserted fit with exceedingly close margins even before burnishing.

A cavity was shown in the left lateral involving the mesial surface and entered from the lingual. The model was made by taking the impression in two sections by using a special tray Fig. 3 with a thin septum and passing the septum between the teeth from the lingual surface with wax upon

it then placing another piece of wax over the exposed end of the septum after trimming and wetting it. After removing these they are placed together again in normal relation and sealed together with a warm instrument. The stone model is placed in it and after baking, the inlay is cast

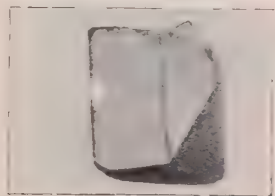


Fig. 3

into it. The patient was saved practically all the experience and discomfort of the construction and finishing of the fillings, having only to have them cemented and burnished and the results were said to fill a very high ideal.

"ALVEOLITIS"—THE DISEASE OF WHICH PYORRHEA ALVEOLARIS IS ONE STAGE

By M. H. Fletcher, D. D. S., M. D., M. S., Cincinnati, Ohio

(Continued from page 53, January Summary.)

TREATMENT.

IN the first place, in extensive cases, the tissues will need to be cocaineized a 5 to 10 per cent. solution being injected into the pockets. If the tissues are very sensitive, a weaker solution can be injected into the gums, the same as when teeth are extracted. The periosteum is very sensitive, but bone is not so, and dead bone not at all so. The use of cocain must be determined by the conditions. I use it as sparingly as possible, for the reason that if enough is used to produce anesthesia it usually produces a sleepless, disagreeable effect, if it does not prostrate the patient for a day or two. Usually the cocain can be postponed until the point of curetting and burring is reached.

Next, all calcareous deposits must be removed. There are hundreds of instruments made for this purpose, each operator having his own preference in instruments and his own methods of use. But the deposits must be most thoroughly removed and the teeth and roots polished with an orange stick and pumice, floss, discs or brush, or whatever the operator can best use to restore the teeth to a smoothness equal to that they originally had.

Experience shows that scratches and grooves on the roots from instruments are nearly always present, although they should not be. These scratches, when under the margin of the gums, do not cause the roots to decay nor prevent the tissues from becoming healthy; but calcareous deposits remaining, however slight in amount, will continue to irritate and

increase, resulting in a repetition of the various stages of the disease, namely, initial lesion, increased inflammation, infection and destruction of bone. One of the most important parts of the treatment consists in teaching the patient how to keep the teeth free from calcareous deposits. If tartar is not allowed to form about the gum, it will not form below, and the disease is prevented; otherwise it is likely to return.

After removal of deposits comes the removal of necrosed bone. No repair is ever complete unless this is done. It is oftenest done, however, by Nature herself without intentional aid from the doctor.

It may be said: "But many patients have been thus treated and cured for years past." So they have; but the thing of next importance after the removal of the deposits has been accomplished unconsciously; that is, the tissues have been wounded with instruments, antiseptics or escharotics, thus stimulating Nature to greater effort in repairing the injuries inflicted in the fresh wounds. This new effort is acute and active, just as it would be in any other portion of the body in the case of a fresh injury.

In this effort Nature breaks through and over the old limiting zone or membrane which she formerly built up against a slow insidious enemy, before which she was gradually losing ground.

Now, it would seem the rational thing for the physician to seek out the points of attack, and by conscious effort to assist Nature by tearing down and removing her enemy's citadel, the infected and dead bone, be it ever so small an amount, thereby reducing the enemy's forces and stimulating Nature to a renewed and stronger effort, and thus not only shortening the time of repair, but making it more sure. In this way recovery can be induced in many cases which would otherwise end unfavorably. The progress of tuberculous infection in bone is so slow that many patients, even if not entirely cured, may be much relieved, in that the disease becomes quiescent, and the affected teeth, which otherwise would be lost, remain useful for years.

The conscious effort referred to consists in the use of delicate bone curettes and suitably shaped burs for removing dead bone from about the necks and roots of affected teeth. Examination should first be made about the neck of every tooth with a delicate probe; one of the bone curettes is usually good for this purpose, but a more delicate instrument, like a smooth broach, is often necessary. The sense of touch readily reveals the presence of bone not covered by soft tissue. When such is present there is very little if any sensitiveness, whereas if gums or periosteum still cover the bone, the patient quickly responds to the pain and the touch reveals the difference between live and dead bone. No matter what one may believe as to the causes of the disease, the fact remains that, in the mildest cases of alveolitis in its second or chronic stage, there is always more or less death of the bone about the teeth, and the dead and diseased tissue should be removed in order to give Nature the most assistance:

The third or necrotic stage is that in which the alveolar process is more

deeply involved, the necrosis usually progressing along the root in one tract, until near the apex, then gradually encircling the root, also continuing its ravages into the maxilla. In the upper jaw the infection often goes into the antrum, now and then into the floor of the nose, and many times destroys large sections of the cancellous portion of the superior maxilla. (Figs. 5 and 9).



Fig. 5.—Superior molars and bicuspsids when antrum is involved. The wire passes through the openings into antrum.

In the treatment of these cases, packing is not called for except in instances of extensive removal of tissue, such as curetting the antrum or the removal of considerable portions of the body of the bone.

If systemic treatment is demanded it should be directed toward the restoration of normal health by such means as the elimination from the diet of foods which do not become wholly digested and assimilated, and the copious drinking of pure water. If the local trouble is complicated with other diseases of moment, the general practitioner or specialist should take charge of those.

TIC DOULOUREUX.

Besides these deep-seated extensive cases, there is another class which calls for knowledge of local pathology and great keenness of diagnosis. They are non-suppurative and attended by more or less neuralgic pain, sometimes a matter of small discomfort, again reaching the magnitude of tic douloureux. They usually occur about a perfectly good tooth, and there is no evidence of inflammation, either on inspection or on percussion. The one symptom which calls attention to them is entirely subjective; that is, the patient complains of discomfort or pain in the neighborhood. The tooth affected is usually next to one more deeply affected or next to the space where one has been lost. With a smooth broachlike probe inserted close to the tooth some place will be found which is not sensitive, usually approximating the space where the adjoining tooth was, or the tooth more deeply affected with the disease. The bone is found nude of periosteum and eburnated, that is, abnormally hard. This hardened condition is easily detected by the touch; the bone is very hard to cut even with a bur, and is not sensitive. The treatment consists in the removal of the eburnated bone with a curette or bur; the bur is the better.

Disease of the periosteum, wherever found, is usually accompanied by

neuralgic pains. In view of this fact, I have been led to believe⁵ that the *douloureux* might be due to a disease of the periosteum, starting as above described, and continuing even after all the teeth have been lost.

Subsequent experience has very much strengthened my belief in this theory, and I believe it lies with the stomatologist to work out this hypothesis and find the proper treatment for this most distressing malady. At the present time I would call this variety periosteal alveolitis from tubercular infection, or periosteal caries.

DIAGNOSIS.

The diagnosis of chronic cases of alveolitis needs suitable instruments, sensitive touch and great care; and the treatment, in addition to this, requires a perfect knowledge of the anatomy of the structures and their pathology.

To operate in any of these cases is surgery and not dentistry, so that the stomatologist also needs to be skilled in operative surgery to a degree which gives him suitable knowledge and confidence in himself to handle a patient undergoing the removal of part of the alveolar process either above or below. He must also be capable of opening and properly treating the

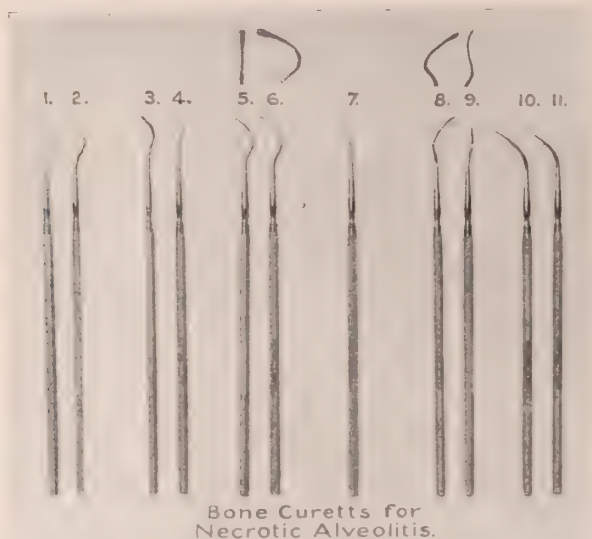


Fig. 6—Bone curettes for removing dead and diseased tissues about the teeth and in deep pockets. The longest ones will reach beyond the apices of the roots.

antrum of Highmore, and of knowing if this cavity is diseased beyond its connection with the teeth, or whether it is diseased at all or not, and of handling a patient under collapse, either from shock or local anesthetic. Further, the operator should be so in touch with this patient and the extent of the operation as to know whether the operation should be performed

5. Fletcher, M. H.: Periosteal Caries, *The Journal A. M. A.*, Sept. 2, 1899, xxxiii, 585.

under local or general anesthesia, and whether it should all be done at once or at intervals of a few days or weeks; for general and systemic complications from secondary and acute infection may occur at any time.

These features will present themselves more strongly when a history of some of the cases is given and the radiographs are shown.

INSTRUMENTS.

Under the impetus, first, of an effort to be thorough, then of surprise at the prevalent ravages of the disease, then of a desire to learn its full extent and how to treat it, I found myself bewildered at times. Consequently, I began to invent instruments which would reach the extended tracts of necrosis. These instruments are here presented for criticism (Figs. 6 and 7).

The curettes, or hand instruments (Fig. 6), are all of the hoe and hatchet type, varying only in size of blade and length and shape of shank. The attempt is made by these variations to reach any extended tract of necrosis. The necrosed portions are usually friable—that is, in the state of osteoporosis—and can easily be cut away with the curettes; but certain phases of the disease and certain kinds of infection often result in osteosclerosis; that is, hardened or eburnated bone, on which the curettes make

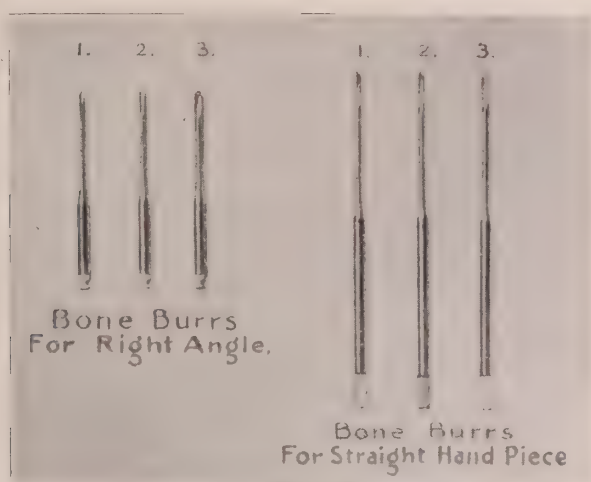


Fig 7—Alveolitis burs for both straight and right-angle hand pieces for the same purpose as the curettes. The burs work more rapidly and thoroughly and are usable in a majority of cases.

little headway. For cutting these hardened bones I have made some extra long bone-cutting burs (Fig. 7), both for the straight and right-angle hand-pieces. The contra-angle seems to be more suited to the work, however, than the right angle. The burs for the contra-angle will reach all cases in the lower jaw and most of the upper, but a bur two and one-half to three inches long—that is, one long enough to reach to and into the antrum—is often necessary for the upper jaw.

While writing this paper my attention was called to an advertisement

in the *Dental Cosmos*, February, 1908, of burs invented by the late Dr. W. W. Allport, "for cutting diseased bone in the treatment of pyorrhea, alveolaris, etc.," but I have been unable to find any of his literature on the subject. I am, however, glad to be supported to this degree by so able a man as Dr. Allport.

On the same advertising page is represented a bone-cutting bur devised by Dr. M. I. Schamberg, who does not, however, as he is quoted in the advertisement, recommend its use for the treatment of alveolitis. The bur, no doubt, would be efficient for that purpose if it was smaller. The same criticism can be made of the Dr. Allport burs, namely, that they are too large to go between the teeth except at or above the ends of the roots.

Experience has taught me that the burs must be of the fissure-bur type, with rounded ends, and small enough to cut away the septums of bone without injury to the roots. Often this can not be done with any bur, since it would necessarily be so delicate that it would break very easily, an accident which occurs quite frequently. The same thing also occurs with the curettes. The alveolitis burs are made without the usual shoulder near the head in order to prevent them from breaking so easily. In many instances the roots of teeth are so close to those adjoining that no instrument sufficiently strong can be inserted into the space.

OPERATIONS.

On account of proximity to the floor of the nose, the antrum and the roof of the mouth, necrotic and suppurative alveolitis may be more serious in the upper than in the lower jaw, since all these cavities may be involved singly or at once. It has fallen to my lot to be obliged to remove much of the alveolar process and to excavate more or less extensively into the cancellous bone of the superior maxillary.

My records show that in the past twenty-two months I have treated 112 patients with necrotic and suppurative alveolitis. This does not include patients in whom moderate amounts of tartar have been removed and the teeth polished. Out of these 112 patients, in 13 the antrum was perforated; 17 had acute osteomyelitis; 8 a considerable portion of the alveolus and bone from the maxilla was removed; 5 had symptoms approaching tic douloureux; and all required more or less curetting of the alveolar process and maxilla. Twenty-four had one or more teeth that could not be saved. In one of the antrum cases the disease was caused by intranasal disorder and has been troublesome for five years. Two patients went to a nose specialist, and I do not know their later condition. In the other ten the conditions have been cleared up, as shown by transillumination, and the patients have been discharged, so far as antrum trouble is concerned.

Affections of the antrum caused by the teeth are much more amenable to treatment than when the disease is from intranasal disorder.

In one instance, in the lower jaw, it was necessary to remove all the alveolar process, back of the canine on one side, curetting ex-

tensively into the body of the bone. In another the patient was operated on by a general surgeon and much of the body of the lower jaw removed on one side, in addition to all the alveolar process from the canine back. The patient was afterward sent to me to have the upper teeth and jaw treated. I found extensive necrosis running back into the cancellous bone from above the superior lateral and central. The harder plates of bone under the floor of the nose and the antrum had not been perforated, but their shapes could easily be felt with the instrument. This patient has been under treatment for six months and is nearly well.

By proper handling, these patients can be conservatively treated and the structures often induced to heal without the radical operation of extended removal of maxillary substance, as is now so frequently done in the hands of the general surgeon.

The laws of regeneration do not permit of complete healing of bone tissue inside of several weeks at the shortest, and often require several months, so that patience and careful watching are necessary on the part of both patient and doctor. One patient now on my list for nearly a year, who would not submit to a radical removal of the cancellous bone in the superior maxillary, has submitted to a small amount of removal from time to time and is gradually recovering under two dressing treatments a week. This case, however, was the result of a dental abscess arising at the apex of the superior lateral which had discharged into the floor of the nose (Fig. 8).

The extensive ravages of alveolitis must be seen to be fully understood, and it is my desire that stomatologists may take up this task and unitedly work out the complete history of the disease, together with the most approved methods and instruments for its successful treatment.

To study the bacteriologic history alone would require months and possibly years of careful, systematic laboratory work, with smears, cultures, inoculations, etc., but, as stated by Miller, there is not much encouragement to do this.

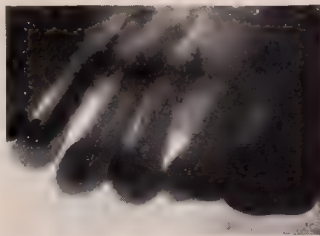


Fig. 8.—The case reported in which disease from superior lateral had perforated to floor of the nose.

This work a busy practitioner, dependent on his services for income, can hardly do, even were he properly trained for it. Nevertheless, practical results can be had without the bacteriologic work; but the best practical and scientific results are dependent on the cooperation of the keen observant

practitioner, with the trained intelligent histologic and bacteriologic investigators in suitable environment.

The literature on this phase of the subject being limited, what is here presented is largely the result of one individual's observation and reasoning, and that done with many duties and demands on his time besides that of a busy practice. Hence these observations are no doubt marred by many mistakes; the same endeavor has been applied to the work that is applied to true scientific research, namely, that of seeking nothing but the truth. Often the path to a scientific fact is very crooked and its pursuit requires courage and persistence, the investigator's only reward often being the attainment of the knowledge of this hypothesis is not well founded. But this fact proved, he is in a position to start again with some errors eliminated and the pleasure of more research as an incentive.

(To be Continued.)

CAST GOLD WORK *

By F. H. McIntosh, D. D. S., Bloomington, Ill.

The method consists in forming of the wax model for the cast gold work, then investing, using a quill tooth-pick for a spatula to place the investing material on the wax model.

Use a piece of mechanical saw to draw the model from the tooth, the same to be used as a sprue, or to hold the model while the regular sprue is attached. Use a heated pair of flat-nosed pliers to withdraw the piece of saw from the model, thus avoiding touching the model with the fingers.

*Given as a clinic before the Semi-Centennial Jubilee meeting of the Indiana State Dental Society, June, 1908.

TREATMENT OF A CASE OF PYORRHEA ALVEOLARIS *

By J. P. Buckley, D. D. S., Ph. G., Chicago, Ill.

The patient was one who had previously been treated for pyorrhea. The case was not an aggravated one. The treatment consisted of a thorough removal of the deposits by instrumentation, after which the crowns and necks of the teeth were highly polished with orange wood and pumice. Powdered sodium bicarbonate was recommended to be added to the pumice and the mixture moistened with cinnamon water. This reduces the sensitiveness which usually exists about the necks of such teeth and does away with the foaming resulting from the use of hydrogen dioxide, when this agent is used. Attention was called by the clinician to the method of making solutions for spraying purposes in prophylactic and pyorrhea treat-

*Given as a clinic before the Semi-Centennial Jubilee meeting, Indianapolis, June, 1908.

ment. Astringent remedies were advocated for local application, depending on the case, and the following general mouthwash was recommended for home use by the patient, together with instructions for brushing the teeth:

R Zinci sulphocarbollatis, 5ss Liquoris antiseptici f5viij-M.

Sig.—Dilute with one-half water, and use as directed.

CAST CAP AND DOWEL FOR BADLY BROKEN-DOWN ROOTS*

By Chalmers J. Lyons, D. D. S., Jackson, Mich.

This method consists of taken impression of enlarged root canal and broken end of the root, using a piece of iridio platinum wire gauge 20, and length of dowel to carry the wax to end of canal. The impression was then carved up leaving a cap over end of root and square post to receive the crown and whole thing cast in pure gold with the iridio platinum wire in the center.

A matrix of platinum 1/1000 was made as follows: A tube was made approximately the size of the square post which was soldered to a plate of platinum of same thickness. This then was burnished over post and cap.

A Davis crown was then used to form the crown by cutting out a section mesio distally approximating the size of square post. This was attached to matrix while in position on cap by means of beeswax and crown and matrix removed. The crown and matrix were held in position by hawk bill pliers and beeswax removed and Consolidated porcelain body used to fill in space between matrix and crown and then fused, thus completing the crown with the same body throughout.

* Given as a clinic before the Semi-Centennial Jubilee meeting of the Indiana State Dental Society, June, 1908.

A METHOD OF REPAIRING RUBBER PLATES*

By James P. Gray, D. D. S., New Castle, Ky.

This is a simple method of replacing teeth on plates by making grooves and undercuts, and after applying soldering fluid to pins, flow Melotte's metal around the pins and fill up the cavity and undercuts flush with the plate. Then polish down even with the plate. The metal is manipulated with a hot spatula.

This method you will find quite a time saver and a more satisfactory means of repair than by the old way.

* Given as a clinic before the Semi-Centennial Jubilee meeting of the Indiana State Dental Society, June, 1908.

A TOOTH BANDAGE*

By **McFarran Crow, D. D. S., Versailles, Ky.**

In preparing the cavity, simply remove the decay and smooth and bevel the margins.

To a piece of 36 g. pure gold, sufficient in size to cover the orifice of the cavity, solder a loop staple, or button of gold or platinum for an anchorage. Place the gold over the cavity orifice with the anchorage in the cavity, and burnish the gold to the margins. Finish by contouring with wax and casting in the usual way for large fillings.

For medium and small fillings, contour with crystal gold and melt solder thereon with a mouth blow pipe without investing.

*Given as a clinic before the Semi-Centennial Jubilee meeting of the Indiana State Dental Society, June, 1908.

JACKET PORCELAIN CROWN FROM A CEMENT MODEL*

By **Lucian H. Arnold, D. D. S., Chicago, Ill.**

This clinic demonstrated the making of a "Jacket" porcelain crown from a cement model. A perfect model having been secured, a 1/1000 platinum matrix is burnished to absolutely fit the model, but the lap is not soldered.

The first baking is of high fusing body, applied at the gingival shoulder and extending not over one-third the length of the crown, baked to a biscuit.

The second baking—also of high fusing body—is intended to roughly restore the dentine and is baked to a full biscuit.

The third baking—of slightly lower fusing body—is full carved and slightly over contoured and baked to a full glaze.

A drop of water is then put into the matrix and the platinum stripped out and the shell cemented to place.

Specimens were also shown which were made in one baking and also in two bakings and the advantages of three bakings were fully shown.

*Given as a clinic at the Semi-Centennial Jubilee Meeting of the Indiana State Dental Society, June, 1908.

TO understand men is better than to stand like the Pharisee, "afar off," despising them—in the ignorance conceived in our own self-conceit. To help others is far better than to criticise them, no matter how brilliant the criticism may be. To make the world better, and those who live in it healthier, happier and wiser, is a task for godlike men.

ORAL PROPHYLAXIS*

By Dr. George Zederbaum, D. D. S., Charlotte, Mich.

THE main objects of this clinic were, first, to demonstrate the practical value of an experienced assistant at the chair in economizing time and in rendering better service; and second, to show the proper procedure from the time the patient is seated in the chair to the end of the first treatment.

Owing to the lack of time, only the lower jaw of the patient received attention.

All the instruments, sealers and files of various makes were sterilized before the patient's eyes. For the sterilizing fluid a solution of equal parts of Formaldehyde and 10% Borax Sol. in water was used. This solution, recommended by Dr. Buckley and tested by the clinician, is par-excellent, easily made, cost very nominal, very effectual and does not tarnish the instruments. The instruments after being rested in this fluid for a few moments were transferred into a porcelain tray containing sufficient amount of cassia water to immerse them. The object is simply to remove the pungency from the sterilizing solution. The cassia water is made by thoroughly triturating 15 drops of oil of cassia in 30 grains of precipitated calcium phosphate, then adding 8 ounces of distilled water and filtering, which should give a clear aqueous solution of the oil. The instruments were then dried by absorbent napkin and one by one handed me by the trained assistant. A thorough scaling, first of all, commencing on the lingual surface of the left lower molar, reaching into the embrasures and following up anteriorly and again posteriorly to the right side until the distal surface of the last right lower molar was reached. Then, with right and left scaler, respectively, the buccal and the labial surfaces were attended to in like manner, commencing at the disto-buccal surfaces of the right lower molar, working anteriorly and reaching into each interproximate space at several points, mostly at the gingival border of the bicuspid, considerable sensitiveness was encountered. To overcome this the patient used as a mouth wash, the Alkaline Antiseptic Solution (National Pharmacopoeia). This solution, ingredients and the quantity of each being no secret, helped the progress materially. The teeth being well scaled, the next step was to free the occlusal surfaces of the molars and the bicuspid from foreign substances. For this purpose a stiff tooth polishing brush was used in engine hand-piece. The next step all the fillings in the lower teeth received attention. Some overhangings were removed, and occasional expansions of amalgam fillings were dressed down, all being smoothly finished. Waxed floss was then introduced into each interproximate space and foreign material lodged therein was successfully removed; the patient here being instructed in the proper use of the floss, thus not injuring the delicate "V" shaped

*Given as a clinic at the Semi-Centennial Jubilee meeting of the Indiana State Dental Society, June, 1908.

septa. The next step consisted of thorough polishing of each individual tooth on all surfaces by means of an orange-wood point moistened with an antiseptic solution carrying finely powdered pumice stone. Each tooth was absolutely finished before giving attention to its adjacent neighbor. This work being done, the mouth was sprayed with three different spraying solutions, these bringing the remaining bacterial plaques to the surface, and making them even without the aid of a magnifying glass, quite visible to the naked eye. I hold, that no matter how thorough you have been in your polishing work, the use of the staining solutions will reveal undisturbed plaques. These spraying solutions are recommended by Dr. Ferris of Brooklyn and are somewhat modified by Dr. O. W. White of Detroit and myself to make them more agreeable. It will be perhaps well to give the formula and the manner of using before going ahead with the description of the final steps. For convenience, the solutions are known as numbers one, two and three. They are to be used at some 110° Fahrenheit or about 43° Centigrade, and are to be used at an interval of about four minutes. While a common bulb atomizer could be used, a supply of compressed air is much more preferable. Spray number one consists of iodine 19 grains, potassium iodide 19 grains, and distilled water, four ounces. This is the main staining agent, and on account of the corrosive nature of its contents should not be used through a metallic spray tip, but a glass one. I prefer the McElroy's tip. After four minutes, during which time the patient should not rinse the mouth, use the warm solution number two, which consists of c. p. starch, 62 grains; spirits of peppermint, one-quarter of an ounce and one pint of distilled water. In preparing this solution see that the starch is well broken up by boiling a long period. This solution now sprayed into the mouth, renders the condition in the mouth more agreeable to the patient and converts the iodic principles of the spray number one into iodides of starch. Upon examinations, darkish streaks will make their appearance, and not at all strangely, these are mostly in the least accessible places, thus indicating even to the most sceptical, that the orange-wood point did not reach them. And it is right here where this has to be done over again, polishing and rubbing until these plaques disappear. Then, the solution number three should be used, which consists of soda bicarb, 72 grains; spirits of wintergreen, one-quarter ounce and one pint of water. This is the neutralizing agent and besides being a most palliative and a most agreeable one to the mouth, it well washes off the debris. It is my custom simultaneously with the spray to rub the gum tissue well on the lingual as well as on the buccal and the labial surfaces of the jaws.

In cases of pyorrhoëa, in addition to the treatment herein outlined, after the proper treatment by mechanical means, the use of pheno-sulfonic acid is highly recommended in pockets. This acid, as I explained at the clinic, has to be made with some precautions, as, unless these are taken, you will not have a true chemical compound, but will have a milky precipitous liquid absolutely void of any curative property. This is made by using one

dram of phenol at nearly boiling point (best to heat it in a test tube), and while hot, adding to it C. P. sulphuric acid, one dram, and agitating the tube the while and diluting the whole with two drams of water. This solution, termed from its constituents pheno-sulfonic acid, should be used in the pockets at 25% and in the most aggravated cases 50% strength. Fill syringe, insert point as far into the depth of the pocket discharging pus, as convenient and not too painful, and slowly press in the piston and withdraw the point. The pus will literally be cooked and its appearance at a further sitting in most cases will not be a prominent feature. The patient should be given a proper astringent wash for home use—I do not like the proprietary medicines, the cure-alls, and therefore write prescriptions for each individual case, even for tooth-powders. A good astringent mouth wash for after treatment in pyorrhoea, or in any case of spongy gums is: zinc-sulpho carbolate and zinc pheno sulphate, each half a dram. Liquor antisepticus eight fluid ounces. This to be used ad libitum, diluted in water. I feel very grateful for the attention given to my clinic by many present, and a most pleasing feature after completion of the work, was the utterance of the patient to those about her, to the effect that though she attends to her teeth regularly, she never before had experienced as cleanly and as comfortable, smooth condition, as she expressed it, as she did then.

IF WE KNEW.

If I knew you and you knew me—
 If both of us could clearly see,
 And with an inner sight divine,
 The meaning of your heart and mine,
 I'm sure that we would differ less
 And clasp our hands in friendliness;
 Our thoughts would pleasantly agree
 If I knew you and you knew me.

—Nixon Waterman.

Read here the moral roundly writ
 For him that into battle goes
 Each soul that hitting hard and hit
 Encounters—gross or ghostly foes:

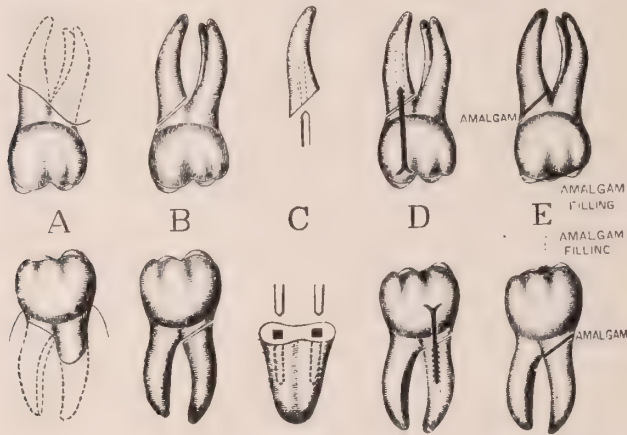
Prince, blown by many overthrows,
 Half blind with sheen, half choked with dirt.
 Man cannot tell, but Allah knows
 How much the other side was hurt!

—Kipling

PORCELAIN ROOTS FOR MULTI-ROOTED TEETH*

By M. L. Rhein, M. D., D. D. S., New York, N. Y.

THE pulp is entirely removed from all the root-canals, which are then permanently filled as far as the pulp-chamber. The main large opening in the crown should be filled with some temporary stopping that can be easily removed. The next step is the amputation of the necrosed root by means of a fissure drill revolving in the engine. (See Fig. B.) The patient is then dismissed for about four hours, and cautioned to keep the mouth as aseptic as possible by the free use of a suitable antiseptic wash.



The entire amputated root is now covered with a thin film of paraffin, in order to allow for loss of substance due to whatever root absorption may have taken place. The impression of the root is now taken in two parts, as it has been discovered that by baking the artificial root in sections, shrinkage of the periphery of the root is avoided, and a much better facsimile of the natural root is obtained. This is done by first taking an impression of about one-half of the root; articulating grooves are cut in this half, and the model of the other half of the root is made by pouring plaster over the first model, which has been previously varnished. The two parts are then separated and the root removed from the plaster.

In working by means of the electric furnace, two suitable pieces of platinum foil, having first been annealed in the furnace, are carefully burnished in the impressions of the sections of the root, and these form the matrices in which the porcelain is baked. The matrices are stiffened by baking a thin film of porcelain in them, and then reburnished in their original impressions. The baking of the root in two sections is now proceeded with in the same manner as if two separate porcelain inlays were being baked, care being taken to avoid porosity. Around a square platinum pin.

* Given as a clinic before the Semi-Centennial Jubilee meeting of the Indiana State Dental Society, June, 1908.

which is to anchor the root, is burnished a thin piece of platinum, the ends of which are soldered with pure gold to form a box. This platinum box which is to hold the pin that enters the crown, is placed in one section, which is not yet baked entirely flush. The pin should be held in the box while the porcelain body is being packed, and only removed just before this section is placed in the furnace, in order to prevent the box being damaged. The box should be left protruding beyond the porcelain in order to enable it to be more satisfactorily finished.

When the two parts are completely baked, the sides which are to come together are evenly ground so that they will form a perfect joint. The platinum is then stripped from the half not containing the box, and the surplus platinum of the remaining matrix wrapped around the stripped half in order to keep the two parts in perfect juxtaposition, the approximating sides having been previously painted with a thin film of fresh body. It is then placed in the furnace and the two parts fused together. All remaining platinum is now stripped from the root, and all protruding edges around the joint are ground away. The entire surface of the porcelain root is now painted with a thin film of body and placed into the furnace for the last time in an upright position, and the heat turned off just before the glazing state is reached. In broad roots, like the anterior roots of lower molars, two pins, and necessarily two boxes, will be found advisable. (See Fig. C.)

Everything is now ready for permanently anchoring the porcelain root to the natural tooth. The old socket is thoroughly washed with a warm antiseptic solution. The artificial root being placed in position, and everything being thoroughly dry, the box is filled with cement into which the pin is placed, having been passed through the crown cavity. (See Fig. D.) In this manner the pin engages the root in its proper relative position to the stump of the crown, and care should be taken to leave a space between one-thirty-second and one-sixty-fourth of an inch between the porcelain root and the stump of the crown of the natural tooth in order to have sufficient space for an amalgam joint. The crown cavity is now packed with suitable soft amalgam, which is forced between the artificial root and the natural stump, and this forms an hermetically sealed joint. (See Fig. E.) The gum in its efforts to shrink contracts tightly against the porcelain root, holding it firmly in position, and thus prevents the entrance of any extraneous matter. We have now replaced a disorganizing organic substance by an absolutely inorganic material, which cannot be acted upon by oral fluids.

In closing, it might be well to state that the bone of the maxilla is not reached in any manner, and the operation should by no means be confounded with any form of implantation, the root being held in position solely by the soft tissues in which it is imbedded.

THE NEW METHOD OF MIXING ASCHER'S ARTIFICIAL ENAMEL *

By C. M. Baldwin, D. D. S., Chicago, Illinois

THE clinician demonstrated the technique of cavity preparation and filling with Ascher's Artificial Enamel, using a set of tortoise shell pointed instruments. The new celluloid strips and disks, shade guide and tortoise shell points were shown, the points to be set on handles (with gum shellac) by the dentist. The new method of mixing is quite a departure from that of "mixing thoroughly" or the usual method of spatulating oxyphosphate cements. The spatula should be small in proportion to the mix, as it is impossible to incorporate the proper proportion of powder using a broad bulky spatula to manipulate as small a mass as is used for the average cavity. To obtain the best chemical body, the chemist directs that the liquid be stirred before it is removed from the bottle, to keep the liquid as uniform in character as possible. About twice as much powder as liquid should be gradually but quickly *stirred* into the liquid without any rubbing or grinding between slab and spatula. Small quantities of powder are then to be added almost continuously and but little mixing of the mass of each addition before adding more powder until the required consistency is reached. The last powder added should always be given the color of the moist mass before manipulation ceases when it should immediately be placed in the cavity, never attempting to fill the simplest cavity with less than two pellets..

The entire mixing process being that of stirring and mixing, with frequent removal from spatula and slab, turning, patting and pressing so as to work the dry powder into the moist mass to bring about the necessary chemical action.

* Given as a clinic before the Semi-Centennial Jubilee meeting of the Indiana State Dental Society, June, 1908.

HOW TO GET POOR QUICK

Do not try to save your loose change. It is too small an amount to put in the savings bank. It would not amount to much anyway, and there is great comfort in spending it. Just wait until you get sufficient worth while before you deposit it.

Do not try to economize. It is an infernal nuisance to always try to save a few cents here and there. Besides, you will get the reputation of being mean and stingy. You want everybody to think you are generous.

Just look out for today. Have a good time as you go along. Just use your money yourself. Don't deprive yourself for the sake of laying up something for other people to fight over. Besides you are sure of today. You might not be alive to-morrow.—*Success Magazine*.

Once open the door to trouble, and its visits are three fold: first, in anticipation; second, in actual presence; third, in living it over again. Therefore, never anticipate, make as little of its presence as possible, forget it as soon as past.

WHY DENTAL STUDENTS SHOULD STUDY MEDICINE.*

By F. W. Stiff, D. D. S., Richmond, Virginia.

WHEN we consider that Medical Science treats of the prevention and cure of the diseases of the human body, it does not require a moment's thought to convince us that Dentistry must, of necessity, be a branch of Medicine, since it treats of the prevention and cure of the diseases of the oral cavity, which is an important part of the human body. So that phase of the question will not be discussed.

Why should dentists take the whole of Medicine?

Why is it not sufficient to study only such branches or parts of Medicine as pertain and relate to the specialty of Dentistry?

The question might as pertinently be asked as to any other branch, for that matter.

My position, it may as well be stated in the beginning, is, that it is as requisite that any other specialist or the general practitioner, should study the principles of the dental branch of the science as for the dentist to include the other branches in his course.

The body is one whole. Each part and function are so correlated with and interdependent upon, all other parts and functions, that a knowledge of the whole is necessary to the full understanding of the part. Hence the physician should know the diseases of the oral cavity and how they should be treated, as other parts of the body, if he would be well rounded in his knowledge of the whole field of the Science of Medicine.

It is well known, and freely admitted, by physicians, that they are wholly wanting in this part of their medical knowledge.

Diseases of the general system which he has to treat, have, some of them, their origin in or about the mouth, and for diagnostic purposes, a thorough knowledge of disease manifestations in the oral cavity is extremely desirable.

And, because of the reflex actions of other nearly related, and even distantly related, parts as well, upon the mouth and teeth with which he has daily to treat, it is needful that the dentist should have an intimate knowledge of these influences. And this knowledge he can only secure through the study of general medicine.

So that I am firmly of the opinion, that the logical and scientific curriculum of the ideal medical school of the future must include the teaching of theoretical dentistry to all its students, whether they are to practice Dentistry or any other branch of Medicine.

OTHER REASONS WHY DENTISTS SHOULD STUDY GENERAL MEDICINE.

But before discussing how this may be done, let me briefly state a few of the many other reasons why dental students should study general medi-

* Read before the Virginia State Dental Association, 1908.

cine as a prerequisite to the practice of the specialty of dentistry. The present position of dentistry as a special science, separate and apart from medicine, and practiced under a distinct title or degree, is due to the failure of the medical profession to realize the close and intimate relationship between the two. And the men who were at the head of the movement to teach dentistry as a branch of Medicine, were forced to confer the dental degree. Medical men and dentists alike recognize the mistake made, and see what an anomalous position dentists are placed in,—that of practicing a branch of medicine under a separate title; the only branch that does it.

It behooves us of this day to correct this mistake and take our place in the family of Medicine where we have always belonged.

Medicine recognizes the great attainments and just claims of Dentistry, and I verily believe is willing to help us in our effort.

And these medical men with whom I have had earnest consultations are of the opinion that it is no less necessary for medical students to study dentistry than for dental students to study medicine.

When we practice the specialty of dentistry under the title of M. D. as all other specialties are practiced, we will publish to the world that we are a part of medicine and will be so considered by physicians and the public and our position in medicine and before the world will be of infinitely greater dignity than now.

We will then be considered in consultation by the general practitioner and other specialists as the body of us are not at this time, and never will be except by a few broad-minded members of the medical profession. They consider that we are not medical men,—only dentists, and beyond the pale of their recognition, professionally. *And, as the case is, they are largely right, because of the nature of our professional education. To secure proper standing and recognition commensurate with our worth or what we should be worth to Medicine and the public, we must qualify. And to qualify means to pay the price that other branches of the science pay,—that of acquiring a general knowledge of medicine.*

Then we must not forget that we can serve our patients better in the treatment of the many diseases related to the oral cavity, because of the increase of knowledge secured from the study of the whole subject. To thoroughly understand and treat a part one must know the whole.

Then, if the dental student is obliged to take medicine, it will insure a better qualified matriculate because of the higher entrance requirement of medicine than dentistry,—medicine requiring graduation from a high school and dentistry fitness for entrance upon the fourth year of the high school course. This will, of necessity, produce a higher grade of men entering the profession and fewer cheap John, quack dentists must result.

The graduate under the proposed plan will be a graduate in medicine, and so entitled to practice any branch he may prefer. If he at any time desires to give up the practice of dentistry, because of ill-health or other reason, he may, by a short post-graduate course, prepare himself for

the practice of any specialty and have no College Board of Examiners or law to interfere. *Can you do this now, you dentist with D. D. S. after your name? Any other specialist of Medicine may.*

We will then have the support of the whole body of Medicine in any undertaking projected because we would be a recognized part of that body. All medical societies would be open to us, and we would be eligible to appointment to certain positions of emolument, honor and trust, now closed to us and open to medical men.

There would be no fight for recognition as co-equals of medicine in the Army and Navy, running through years of Congressional legislation, and the question of rank between medical and dental officers could not be raised.

But what is the need of multiplying reasons for a movement that is so manifestly desirable and proper? I might quote from the paper prepared by your committee appointed to further this project, entitled "The Recognition of Dentistry as a Specialty of General Medicine and Surgery," but each of you, I presume, has seen it. Even if you have not read the paper, the endorsement by this Association on two occasions, by the Richmond City Dental Society, by the State Board of Dental Examiners and by the joint faculty of the Medical college of Virginia, should render it unnecessary to give further reasons to Virginians in order to prove to them the desirability and necessity for the proposed action.

HOW IS IT TO BE DONE?

The question which now confronts us, is,—how is it to be done? I think, first, the dento-medical student must be educated in four years. More than four years, it seems to me, is too much of life to require of the average man to spend in the acquirement of the fundamentals of a professional education sufficient to enter him upon his field of work. College work is fundamental: he is only beginning to learn when he leaves college. He simply has the foundation upon which to build, and four years seems to be sufficient for this. Should an ambitious man desire extra preparation in any specialty, he takes post-graduate work before practice. The field of Medicine is so large that it is only the exceptionally bright man who can be fitted in four years to go into practice at once upon graduation, taking up a specialty.

He must go into an office or enter a post school for experience and further special knowledge. *It is this necessity in medicine for specializing, because of the immense mass of knowledge to be gained in order to grasp all of medical lore, that has opened the way for dentistry to be taught in medical colleges to dentists and medical students alike.*

Medical colleges are required to devote 4,000 hours in the four years of the course to the instruction of the student, in actual work. But they are allowed to fall 10% below that and not more than 20% below it on any one subject. 25% of this time must be given laboratory or practical work. So that there are, speaking grossly, and presuming that colleges meet requirements and use at least 3,600 hours,—there are still left 400

hours that might be devoted to the teaching of another branch. If this were done, i. e. the introduction of dentistry into the course, then the 25% of time required for practical work might be used by the dental specialist in the dental laboratory or infirmary, eliminating from his course the practical work required by the other branches. (a) He would be required, as would all others, to take theory but not the practice of general medicine, taking only the practical in his specialty. And the students of other branches would put in the 25% of practical work in their specialties, leaving out practical work in the branch of dentistry and other specialties than their own. So *by a system of electives*, which the medical schools are now considering (Harvard and others having already adopted it) the first two years of medical study will be devoted to the general principles of the science, the body and disease, chemistry, etc.

At the beginning of the third year, the student will have determined whether he will devote his practice to general medicine or to one of its branches. He will so announce to the college authorities and his work will be arranged according to his needs, and he will, for the last two years *specialize on the branch he desires to practice.*

He will have secured in the first two years a general knowledge of medicine in the last two he devotes his whole attention to thoroughly familiarizing himself with the specialty to which he is to devote his life's work.

Then, so far as the dental specialist is concerned, if the time is too short in the four years for the theory of medicine as a whole (always including dentistry, now, for all the students) and dental practical work, it should be open to him, if not required of him, to spend a portion of the vacations (three of them in the four years) in the infirmary and laboratory, which should be kept open the year round for that purpose.

This, briefly stated, seems to me and eminent medical educators of long experience with whom I have discussed the question frequently, to be a feasible and practical plan for accomplishing our purpose. The minutiae of the plan, of course, it is not necessary to give in this paper.

I wish to say to you, in conclusion, as a member of your committee on legislation, which has this work in hand, that the time is ripe for the movement. Both medical men and dentists are aroused to the necessity for it as never before. Your committee is working together harmoniously, diligently and faithfully, and I verily believe that the time is not far distant when Virginia will stand out before the world in this as she has in so many other important movements, taking her place in the forefront and thus making her name honored wherever the English tongue is spoken.

With your hearty and enthusiastic support as a body, and especially as individuals, there can be but one result, - success, and that speedily.

EXCHANGE OF PRACTICAL IDEAS

PORCELAIN CROWN WITH CAST GOLD BASE

By W. A. Sanderson, D. D. S., Pittsburg, Pa.

To make a porcelain crown with a cast gold base proceed as follows:
Select a tooth of any make desired. Either fixed or detached post.

Prepare root in usual manner, with a short bevel in labial, and a longer bevel in palatal direction. Grind crown roughly to place leaving plenty of space between the crown and the end of the root on the palatal side. Mould a small piece of soft inlay wax about the pin and press to place or nearly so. Remove and trim away surplus wax. Warm slightly and press home. After again removing be careful to remove all wax from face of porcelain, wipe it away with cotton saturated with alcohol or chloroform. If using detachable-post crown, remove the porcelain, attach the sprue wire at the thickest point of the wax, viz.: at the palatal heel. Also attach another wire (24 or 25 gauge) at a point as near the labial surface as is possible. When investing pass the second wire through a hole made in the side of the bucket for that purpose. After the investment has set, remove the sprue and both wires. The object of the second wire is to provide an escape for the air or gas which would otherwise be confined in the mould.

It will be found difficult to cast the gold to a thin edge without this provision for the escape of gas.

When using a fixed-post crown remember that it is impossible to over-heat with natural gas and blow-pipe, and the hotter the case, the less liable is the porcelain to check.

After casting, smooth with paper discs and polish. The result will be a perfect adaptation to root and crown. In cases of enlarged root canal the wax and consequently the gold can be forced up on the post, thus giving extra strength and a perfect adaptation of the post to the root.

A STAPLE ATTACHMENT FOR A BRIDGE FROM CUSPID TO CUSPID

By F. O. Kidd, D. D. S., Fall River, Mass.

I use this system also as a splint for loose teeth and as a system of restoring the occlusion of the incisor teeth that have been badly worn down as we oftentimes see them in elderly people. This appliance is at once very durable and easily made. The minimum amount of tooth mutilation with the maximum amount of strength. My process of making is as fol-

lows: I grind the palatal surface of the tooth for sufficient thickness, then I drill two holes on each side of the pulp, the depth and size of the pins in a facing (See Fig. 1). In fact, these pins are what I use and are just the right thing. Then I grind a groove from hole to hole and the tooth is ready for the appliance. I then take a piece of pure gold, 36 gauge, and burnish to the tooth, then puncture the backing through the holes drilled in



Fig. 1

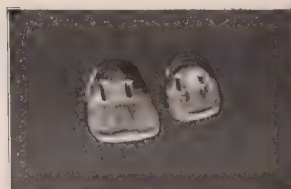


Fig. 2

the tooth and set in the pins, then by pressing a little sticky wax to the backing and pins, the whole is easily removed. I then invest in a very little investment, and tack my pins to the backing, with a little solder (See Fig. 2) then I place in position again and reburnish. Then it is ready to proceed with, in your usual way for bridge or restoration of occlusion. Fig. 3 shows backings in position and Fig. 4 the appearance of the teeth from labial side.

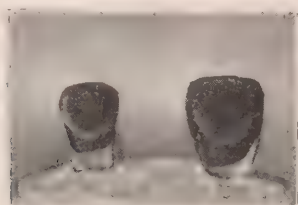


Fig. 3

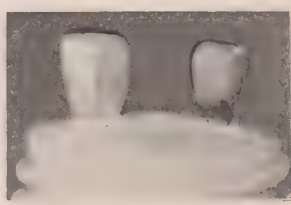


Fig. 4

I have used these staple abutments in cases for a great many years with the best of satisfaction. I recently saw a bridge from cuspid to cuspid that I put on nine years ago with these attachments, and it was in as good condition as the day it was placed. I will cheerfully answer any questions that any one interested cares to ask.

TO PREVENT DARK SPACES IN PLATES

By A. C. Barclay, D. D. S., Pittsburg, Pa.

To overcome dark spaces in plates I use *white* rubber between the teeth, placing it carefully just where I want it when the case is complete. I then pack pink rubber over this and around the teeth as usual, and vulcanize and finish in the customary way.

When the plate is polished the white rubber prevents the shadows that so often produce those unsightly dark spaces. The work must be done carefully to get the best results.

A METHOD OF REMOVING PIN FROM ROOT

By J. McGregor Jones, D. D. S., New Orleans, La.

To remove cement from crowns, or to separate "detached post" and crown that have been cemented together, boil them in a solution of sulphuric acid.

To remove pin from root of tooth: Take a large broach and cut it off above the barbs, and bevel it on two sides, so that it will be wedge shape. Place it in a broach holder, and with hand pressure bore a hole the length of the pin in the cement, between the pin and root. Use the broach as a chisel, cutting the cement so that the chips fall toward the hole. Make each cut the full length of the original opening. Go about three quarters around the pin, when it can be removed without any trouble.

MY CHOICE

It ain't no use to grumble and complain;
It's jest as cheap and easy to rejoice;
When God sorts out the weather and sends rain,
W'y, rain's my choice.

In this existence, dry and wet
Will overtake the best of men—
Some little skift o' clouds 'll shet
The sun off now and then;
They ain't no sense, as I can see,
In mortals sich as you and me
A-faultin' Nature's wise intents,
And lockin' horns with Providence.

It ain't no use to grumble and complain;
It's jest as cheap and easy to rejoice;
When God sorts out the weather and sends rain,
W'y, rain's my choice.

—James Whitecomb Riley.

**Turn, Fortune, turn thy wheel and lower the proud;
Turn thy wheel thro' sunshine, storm and cloud;
Thy wheel and thee we neither love nor hate.**

**Smile and we smile, the lords of many lands;
Frown and we smile, the lords of our own hands;
For man is man and master of his fate.**

—Alfred Tennyson

MISCELLANY

DENTISTRY IN 1958—A GLIMPSE INTO THE FUTURE

By F. B. Spooner, D. D. S., Brooklyn, New York

(Continued from page 71, January Summary.)

SYNOPSIS: A New York dentist, while hunting in the Rocky mountains, is buried by an earthquake. Lying in a comatose state for fifty years, he is discovered and carried to Denver on a flying ship. While in an insane asylum he shows that he is rational by signing his name, which is compared with the records in a New York bank. Denver dentists visit him, telling of the new order of things, amongst others that debts are easily collected; which causes him to faint with astonishment.

When I recovered, my nurse was leaning over me with an anxious expression. "I am all right again," I said, with apologies for such behavior; "joy does not kill, I only want to know how this feat is compassed for lengthening life."

"We have a Society that collects debts," he continued glancing at my Nurse to see if he should proceed. "No matter how trifling the amount, it is pursued to the bitter end, hence all debtors know that they will be hunted to the last ditch, for principle. If it costs ten times the sum, the Society makes itself a terror to evil doers.

"At birth all children have a record number, so I can tell his or her status by calling for the record. This makes for a higher morality than in old times. Swindling, or evading obligations, is looked upon as low, and few that care to hold any position would owe a bill incurred through the trust of a professional man.

"Our Society takes care of improvidents; keeps a watch on young men, so that in their struggles to make a practice, they are encouraged, lest they drop into slack ways."

"The advertisers," I inquired, "those who pull without pain; make plates for three dollars, and get all they can besides."

"Such will be to the end of the world; but," raising his eyebrows, "what is a Society for? We spend more than the fraud to teach the Public. When a humbug publishes that he has an "Alveola" method of tightening teeth, we expend money on principle as well as for business, to show the vermin up."

"You have discovered the Pole, Doctor," I said joyfully, "but all the gold is not worth the greater matter you have found out. In my time there was no understanding of "principle" or the profession would have combined, no sagacity or they would have spent the money to stamp out frauds.

"We had a Society, but there was no effort for lifting up the young man. They charged a trifling sum for dues, yet only a small proportion of the dentists joined. A Prosecutor existed to punish what you speak of as "vermin" but as he presumably had not the time, complaints were handed to a Deputy by the name of Rose—at least that was the name universally applied—who punished the evil doer as he was foolish, or discreet. The Society met once a month, when weary papers were read, and tiresome speakers replied. There was no discussion as to the needy or infirm, or how the Student was to be encouraged to get his living honestly. Yet the need of sustenance was recognized, as we all had refreshments and cigars at close of conference."

"We have few dull meetings now," said Dr. Handsome. "No man is allowed to monopolize the time only for his own satisfaction. We use what is called

THE BORE ELIMINATOR.

In plain view is a dial with a hand similar to a clock. Each member has a hand telegraph which causes the machine to register. Every man can move the mechanism one notch, if he wants the Speaker to stop. When three-quarters of the audience make known their silent disapproval, the Chairman has to tell the Speaker to cease. It seldom needs such radical means, as the Bore can see, and is brazen indeed not to close his remarks as the danger point approaches. This contrivance is in use all over the world; it avoids ill feeling, for the Bore cannot tell who has closed his mouth.

"The man who invented it is making great money," resumed Dr. Handsome. "The Bore is eliminated when he becomes a nuisance; at the same time he cannot be persecuted, for it requires a certain number of the audience to show disgust, which can be regulated in setting the mechanism. Such has been its success, that hardly any deliberative body is without it."

I started from my chair in great excitement.

"Doctor," I cried, "this precise boon to humanity was set forth by me in a dental magazine over fifty years back. At that time the device was treated with scant attention; but I rejoice that I was the first to think of this grand discovery for exterminating Bores."

"Yes," said Dr. Handsome, "and for increasing the interest Odontists take in their monthly meeting, for the indicator begins to spin when a man starts with, 'I first apply the rubber dam,' or—in my thirty years in the practice of dentistry. We have learned to talk to the point, and woe to the man who inflicts his hobbies or tells of his great fees."

"Speaking of fees," I remarked, "when I left my age, certain parties were specializing on Pyorrhoea: good authorities claimed it was systemic."

"Pyorrhoea has almost disappeared. We call it Osteocrosis, from the fact that it is really a form of Necrosis. Coated with Tartar the tooth is undoubtedly a foreign substance. We see that when a tooth is extracted healing at once takes place. If systemic, then it is presumable all the

Gingiva would be involved. The disease is Traumatic, and can come from a tooth brush, a tooth pick splinter, as well as from Tartar."

Doctor Handsome completed the subject, by stating Pyorrhoea—which was dignified in our time as a specialty—to be a disease of sloth and ignorance.

We talked of how "all wore gold plates," as the metal was cheap as lead. Few burs were used by Dentists—but they were made of diamonds—the making of precious stones having reached great perfection. Swedging outfits were in the scrap heap, impressions being cast directly in the mouth. A full upper gold set was shown me—the exact cost of which was seventy-six cents.

Dentists could move from one State to another without fear or fees. The trades, seeing the ease with which the professions restricted competition, followed suit. Carpenters exacted an engineer's certificate from all applicants and required that he know about forestry—and the soil adapted to the various kinds of lumber. No blacksmith could go from Ohio to New York and shoe a horse unless he passed on Metallurgy, and could show proficiency on the soil best fitted to raise the oats that the beast consumed.

The Public was so protected, that when a man started an Incubator factory on the outskirts of Denver—the State board of Poultry desired that the Joiners be examined lest it be dangerous to the Public for incompetents to nail the frame for hatching the chicks.

The man, being bold, fought the Society, but the State board of Thermatics joined with the Poulters, moreover the State Board of Hydraulics insisted they should have a fee, water being used in the incubators. Amongst them all the wretched manufacturer *committed suicide*, and the State Board of Poulters—which consisted of five farmers—bought the plant for a trifle.

The Public—which is slow to see, until it feels—found the price of broilers go up. They looked at their fatuity with amazement, and some of them were so bold as to declare that such Boards were only legalized robbers, who lived by hypocrisy, and examined each other. It was manifestly absurd that a New York Board should not consider an Ohio board's certificate as honest, and vice versa. There was great rejoicing when the whole lot was swept out of existence, some being sent to jail, but most escaping.

Much more I learned of things that were, and which I was afterwards to see, until the day being near its close the Odontists took their leave. My nurse perceiving that I was fatigued, suggested that I have fresh air. Together we traversed a long passage, which opened on a balcony suspended from the structure, an immense distance above the street.

In the distance was Pike's Peak faintly visible. The city was about to sleep, beacon lights flashing up one after the other. Far as I could see, churches and public buildings had roofs of a yellow tint. Gold on every hand covered minarets, and ornaments of the great structures. Snatched from the Pole, where for billions of years it had been inaccessible, it was now as cheap as copper, and sheltered men, instead of being the "root of

all evil." Bunyan, in his vision, never gazed on a fairer "City Beautiful." Time, the great purifier, had wrought as great a change in the Brotherhood of man as in the miracle of converting the desert into a lordly city.

"What is your name?" I asked, as she drew a wrap over my shoulders, for she noticed me trembling with emotion.

"Agnes Freeman Johnson."

"I knew an Agnes Freeman in New York."

"That was my Grandmother's maiden name."

Day was just going out; but I saw her profile against the sky line. The Ghosts of recollection which had puzzled me to know where I had seen her before, now took form. She was the re-incarnation of one who had first taken my boy's fancy NINETY years ago.

(To be Continued.)

CARLYLE said: "The true epic of our times is not 'arms and the man,' but 'tools and the man,' an infinitely wider kind of epic." True in his day, the truth of this saying has been emphasized in the passing of the years until almost the sole question, be it of the brain or hand, is, "What can you do?"

TO SOFTEN MOLDINE WHICH HAS BECOME HARD

It often happens that from frequent use, or long exposure to air, moldine loses its plasticity. The usual method of adding glycerine is more or less satisfactory, even when all instructions are carefully followed. The best process to use is to place the moldine to be softened in a vessel, to which a sufficient quantity of water, to cover the moldine, is added. One or two spoonfuls of glycerine are added to the water. The moldine is then heated until the water has evaporated after which the moldine may be found having its original plasticity.—*Le Laboratoire*.

HELP IN POLISHING AN INLAY

J. P. Buckley, Chicago

It is a tedious process to hold an inlay, especially a small one, with the fingers while polishing. To overcome the difficulty, moisten a piece of cotton, place around the inlay and hold with the thumb and forefinger. The moist cotton not only protects the fingers from the heat of the stone, but keeps the stone wet, and aids materially in the polishing.—*Western Dental Journal*.

EDITORIAL

PROTECTION AGAINST DAMAGE AND MALPRACTICE SUITS

TO one keeping in touch with the dental news appearing in the daily press, it is apparent that damage and malpractice suits against dentists are on the increase. Is it due to a growing popularity with a certain class of unscrupulous people to obtain money by such means, or to the advice of unscrupulous lawyers to bring suits, or is it due to questionable operations performed by a greater number of dentists than formerly?

We cannot here decide this question.

But the fact that such suits are on the increase demands our attention.

From whatever cause a suit may arise, it always brings a dentist conspicuously before the public in an undesirable way. Town gossips are ever waiting an excuse to talk and there is no telling what harm may grow out of the institution of a suit, other than from the suit itself.

To defend a suit takes time from a dentist's practice and causes him much anxiety and nerve strain, to say nothing of costs and penalty if he loses. If the accuser wins, it encourages other unscrupulous persons to seek an opportunity to try the same thing and perhaps on some other dentist.

There is a certain protection against these damage and malpractice suits, and the object of this editorial is to call our readers' attention to it.

On account of the increase of suits against the medical and dental practitioners alleging malpractice, it has become necessary to devise some means by which the individuals may be protected, and such claims combated.

A few of the large insurance companies are issuing this special protection policy.

Under the agreement in these policies, when a claim is filed against a policy holder, and upon notice by him to the company or agent, the company assumes the entire burden of defending the suit. It agrees to use every effort to extinguish the claim before it develops into a suit, but if this cannot be done, the company contests the suit vigorously, without expense to the policyholder. If the policyholder desires to associate his personal attorney with theirs, it is allowed and the company pays his fee.

In some cases the policyholder may have been negligent, and desire a compromise before his negligence can be shown in open court. If he requests it, the company will make the settlement for him, paying the

amount thereof. No claim, however, will be settled without the assured's consent. If a judgment be recovered from a policyholder, the company pays the amount up to the limit of the policy. When people and lawyers know that their fight for damage must be made against a company with perhaps a million dollars in assets to combat it, few if any suits will be brought unless there appears to be just cause for suit.

This insurance is even less expensive to carry than accident insurance, and, like accident insurance, if something happens to you, it's a mighty good thing to have.

IS ANY DENTIST CARELESS?

Not long ago a mere newspaper man was amazed to hear an intelligent woman, who had taken a lively interest in the proceedings of the International Tuberculosis Congress in Washington, say that even dentists were sometimes careless about the precautions necessary to protect their patients from infection. Another woman who was present corroborated the statement of the first, and added that she had seen dentists use the same instruments on different patients without subjecting these instruments to antiseptic cleansing or, in fact, to any cleansing at all.

That any progressive dentist neglects to observe habits of extreme cleanliness, in this age of modern dentistry, we would believe reluctantly, but as a faithful chronicler of feminine small talk we repeat the conversation as quoted in order that dentists everywhere may know that sharp eyes are upon them at all times. Women are acute observers and especially of anything of an uncleanly nature. And although they do not always remark about what they have seen, they usually give it due consideration. No dentist can afford to get a reputation of being slovenly either in person or habits about his office. He should give no one cause to make a single remark about his neglect of the rules of hygiene and asepsis. To guard against this he should impress indelibly upon his mind a single word, and he should daily apply that word to everything about himself and about his office. It should be his watchword ever and anon. Can you guess that word? It's Cleanliness.

MEN YOU KNOW

THE MAN ON THE HOBBY HORSE

DO you remember how, when youngsters, we used to ride back and forth on the rocking horse? Then it was simply play, not agitation. But "men are only children of a larger growth," said Seneca, and today it does not require a telescope to find men who are going up and down astride their hobby-horses. You say to one: "What are you so excited about?"

"Can't you see I'm in a hurry?" he replies.

"There's only one way to get where I want to go, and I'm going to get there and I can't waste any time. Get up, you! Click! Click! Look out, there! Get out of my way!" cries the man on the hobby horse.

"We're not in your way," you reply.

"Yes you are—you're right in front of me," he complains.

And everybody stands and laughs at the man because he is the only one who doesn't see that he is on a hobby horse, and it never could carry him anywhere, except up and down in the same place.

Do you know this man?

There are others like him, plunging up and down and creating an astonishing commotion. You'd think that by the end of the month they'd have doubled their income or made a million dollars, or at least owned a whole block.

What's the excitement?" you inquire.

"It's I," they say "I'm mounted on my fiery steed Ambition and it's about all I can do to keep him from running away with me. If the world gets in our way something terrible will happen—be careful! we'll trample you!"

They have different names for this hobby horse. Some call him Ignorance or Blindness. Others call him Frenzy and explain that he was sired by Sir Selfishness in the well-known stables of the Big I stock farm.

One of his best names is Exaggerated Ego. You must be clever to detect him from his distant cousin, a beautiful racer with a white star in his forehead, named Ambition. This famous racer is not apt to run away unless his rider is one of those people who has no business about blooded stock.

Everyone can't ride a race horse and it means a good deal when you find a man with sense enough to realize that his proper steed is the jackass.

But when a man who understands him chirrup under his breath just once to Ambition, there's going to be a race won, and the brass bands will be at the end of the course and not at the beginning.

But poor Exaggerated Ego, the hobby horse, he couldn't do anything but make a big noise, scratch the furniture a good deal and rock on a great many people's corns in his mad career. And when the rider at last dismounts he looks about and says: "Why! I'm just where I was when I started!"

If you don't mount the right horse, you'll never win the race, and before mounting, settle in your own mind the question: Now, what is this I'm doing and that I'm trying to do?

There is still another name for that hobby horse which we might mention. Some people call him just plain Fool.

CORRESPONDENCE

THE WEST VIRGINIA STATE DENTAL SOCIETY MEETING

THE West Virginia State Dental Society held their annual meeting at Fairmont, W. Va., Oct. 14, 15, 16, 1908.

Dr. H. H. Harrison, the President, was ill at his home so the First Vice President, Dr. Chas. H. Bartlett occupied the chair.

Dr. Harrison's address was read by the Secretary and Dr. Bartlett on taking the chair delivered an able, instructive paper. The first morning's session was taken up with roll call, payment of dues, discussion of needed legislation and appointment of committees. At the afternoon session Dr. Geo. H. Wilson of Cleveland, Ohio, gave a Paper (illustrated by lantern) on the Anatomical Articulation of Teeth. Also a talk illustrated by charts, on Clasps, their proper and improper use and arrangement, followed by a general discussion of the subject. In the evening Dr. H. L. Ambler of Cleveland, Ohio, gave a very interesting talk of Travels in the Orient, also illustrated by lantern slides.

Thursday (the 15th) was entirely devoted to Clinics by the following Clinicians:

Dr. E. R. Kibler, Indianapolis, Ind.; Dr. J. A. Libbey, Pittsburg, Pa.; Dr. A. C. Plant, Wheeling, W. Va.; Dr. H. H. Myers, Pittsburg, Pa.; Dr. F. L. Wright, Wheeling, W. Va.; Dr. Geo. H. Wilson, Cleveland, O.; Dr. A. Earl Hennen, Wheeling, W. Va.

At 7 o'clock the Fairmont dentists gave a banquet to the Society which was attended by *all* the members, all the exhibitors, a few invited physicians and others.

Dr. John W. Storer, of Wheeling, had been appointed toastmaster, and after the feast of good things called on the principal speaker of the evening, Mr. Lee S. Smith, of Pittsburg, Pa. Mr. Smith gave a highly entertaining talk on his travels around the world. Others were then called on by the toastmaster and responded in both serious and humorous talks.

Friday morning was taken up with unfinished clinics, discussions and election of officers, as follows:

President, Dr. Jas. E. Dowden, Fairmont, W. Va.; First Vice-President, Dr. John H. McClure, Wheeling, W. Va.; Second Vice-President, Dr. L. J. Walker, Grafton, W. Va.; Secretary, Dr. F. L. Wright, Wheeling, W. Va.; Treasurer, Dr. D. C. Clark, Blacksville, W. Va.

Wheeling was chosen as the next place of meeting. The time is October 13, 14, 15, 1909.

Wheeling, W. Va.

F. L. WRIGHT, Secretary.

THE CAST GOLD INLAY

Editor The Dental Summary:

There has been considerable discussion in the journals regarding the cast gold inlay, and this leads me to call the attention of the dental profession to a paper read by me before the Iowa State Dental Society at Des Moines in May, 1897, the said article being published in the proceedings of that meeting. It is my impression that I antedated the cast inlay patent by about ten years and gave to the profession the method (or process) of making and setting cast inlays at that time by describing the method of preparing the cavities, taking the impression, etc., as in use by the present day enthusiasts. Quoting from the paper:

"If you secure a perfect impression of the cavity the filling, when cast, will be an exact fit."

"We then have a simple, perfect fitting inlay to be cemented to place."

"This operation (in my opinion) is superior to a *large* filling."

"This work may be extended to include nearly all of the different forms of bridge work, removable or otherwise, and for single crowns. In fact, the limit of this work is bounded only by the inventive genius of the operator."

In the discussion, Dr. Monfort said:

"This is rather a new subject and something that is entirely new to me. Of course it is in the same line as inlays. And the same results are obtained, and I cannot see but what as perfect results are obtained as in inlay work of other sorts"

On reading over this old paper written and read by me over eleven years ago, at which time I had been making and setting in the mouth cast inlays upward of two years, it makes me feel like laying claim to the title of being the original cast inlay worker. What do you think?

I could have made this communication more lengthy by telling how my inspiration for casting came from the Dr. C. C. Carroll outfit for casting aluminum dentures. That is, that portion relating to the 'blowing' the metal into a matrix compound essentially the same as the present day compound called 'Investment Material,' for cast inlays.

So you see that this forcing melted metal by compressed air does not belong to the period of 1907 or 1908. Nor does the investment material.

Yours truly,

B. F. PHILBROOK

Denison, Iowa, Dec. 20th, 1908.

KEEP GOING

WHEN one task is finished, jump into another. Don't hesitate. Don't falter. Don't waver. Don't wait. Keep going! Doing something is always better than doing nothing. For activity breeds ambition, energy, progress, power. And inactivity breeds idleness, laziness, shiftlessness, sloth. Don't dawdle in the hope that inspiration will strike. Inspiration is more likely to strike a busy man than an idle one. Save the half-hours that are wasted in waiting. That is the secret of system. Keep going.

—The Pacemaker.

PRACTICAL SUGGESTIONS

TO KEEP POINTS OF INSTRUMENTS CLEAN WHILE OPERATING

By W. C. Gowan

How should matter which adheres to instruments in excavating, sealing, extracting, etc., be disposed of? To wipe it upon a towel or anything else about table, cabinet, chair, or person of self or patient is clearly unsatisfactory.

Without considering bacteriology, sense of decency will convince an operator that such matter should depart instantly from his presence, to be touched, seen or smelt no more. There is only one proper way for it to go, and that way lies through the fountain spittoon.

Enlarge the curve of your fountain water-cock so as to direct its stream to the waste trap in the centre of the bowl instead of straight downward to the glass-holder as heretofore. Make a fine tip of brass, bone or vulcanite for the nozzle. This tip may be bored with a small engine drill, so as to discharge a fine, smooth stream. Such a stream directed into the waste pipe will not spatter. Instruments held in it below the level of the bowl rim will be instantly cleaned if the proper force of water is on. Engine burs and wheels of all kinds revolving in the handpiece may be cleaned with a facility hitherto unexpected by any operator. For wheels or large points hold the handpiece vertical and point well below the rim to avoid spatter. A "dentate" bur, when clogged, requires a swifter stream and higher speed than others. Cotton leaves the pliers quickly, and all little stuff is neatly disposed of in this stream.

The advantages of this method are too obvious to need further comment. It is not intended, however, to depend on this kind of wash without a sterilizing bath before returning instruments to cabinet.—*Dominion Dental Journal*.

DO NOT USE FILINGS FOR INLAYS

By R. B. Tuller, Chicago

Gold clippings and old gold fillings may be very consistently melted up together to make inlays, but filings, so easily contaminated, should never be introduced, unless the dentist so manages his filing always that all the varying grades and kinds will be kept strictly separate which is rarely done so that one knows the grade of them.—*American Dental Journal*.

TO REFINES SCRAP

R. B. Tuller, Chicago

A simple way to refine a scrap (such as a dentist usually has—filling and clippings from gold plate, *not filings*) is to place it in a pit dug out of a piece of beechwood charcoal which is close grained and not very liable to check. For a flux use equal parts of borax and saltpetre, and sprinkle freely from time to time while the gold is kept *boiling* with the blow-pipe until visually it shows refinement—clear and free from oxidation, and very fluid. It is now ready to be put in the flask crucible and melted for casting. The longer the gold is “boiled” with the high-efficiency flame, the purer the gold will become; but there are some metals that in an alloy exert a persistent undesirable influence without going through the very best process of refinement known.—*American Journal*.

SUPERNUMERARY ROOTS

By W. Parker Harrison

Supernumerary roots are a factor, the possibility of which must be always borne in mind in treating roots of teeth. They occur most frequently in upper molars, in which case the extra root is situated between the anterior buccal and the palatine roots. Lower molars also not infrequently possess supplementary roots. The third root being usually situated between the normal, or appearing further back, displaces the posterior root outwards. Lower molars having five or even six roots, have been described. Premolars also occasionally exhibit extra roots, but in these teeth the fact is usually easily recognized.—*Dental Record*.

GOLD FILLINGS IN PORCELAIN TEETH

By Charles Every Brown

To put a gold filling in a mineral tooth, grind a depression in the tooth where the filling is required, then cover the ground surface with a little Jenkins inlay, or other low-fusing body, and on this press a piece of sponge gold the same size. Fuse this in furnace, and then condense gently with engine mallet, add gold and finish in the same way as with a gold filling. If required, a tooth may be entirely faced with gold in this manner, giving the appearance of an all-gold crown, the inlay body holding the first layer of gold quite firmly, if ordinary care is taken as with a gold filling.—*British Dental Journal*.

WEAKNESS OF A CAST GOLD BRIDGE

By W. J. Montgomery, Chicago, Ill.

The brittleness of a cast gold bridge, due to the gold having been melted several times, may be overcome by sprinkling mercury bichloride over the molten gold immediately before casting. *Dental Brief*.

USEFUL HINTS AND HELPS

By R. B. Tuller, Chicago

It sometimes happens that the pin of a Richmond crown is broken off pretty short within the coping. If an extension of pin could be made the crown might be used again. A bit of thin platinum may be rolled up to make a tube that will fit over the broken stub of pin. Into this fitted end push in a bit of moldine and fill the rest of the tube with solder. Now, with the crown properly invested slip the open end of the platinum over the stub and gradually heat up until the solder flows and fuses all together. This new pin can then be shaped as desired, and readjusted to the hole in the root.

It sometimes happens that a pin has been filed down a little too small. Wrapping on a little of this same platinum and soldering as above will remedy the trouble. Or fine platinum or even gold wire may be used for the same purpose.

In uniting a band for a coping or for a gold crown, if the edges are brought together square and true, it may be easily sweated together by simply holding in a very low flame, one that will just cause the edges to unite and not melt or burn the gold. Too hot a flame will be almost sure to melt or warp the gold before it can be removed, no matter how closely watched. A band united in this way will not open in further soldering and is as strong at the joint as at any other place. An expert can sweat on the swaged top or cusps, but the parts must fit exactly and be in close contact. The inexperienced would most likely fail in this and spoil his case, but any one can with a little care and judgment sweat together the butt end contact of the two ends of a band. It cannot very well be done by lapping the ends.

Holes worn in a crown in use may be filled by boring the hole large enough to remove food that may have worked through, sterilizing the cavern and then filling up with cement, into which before it has hardened a pellet of gold has been thrust. After the cement has hardened the surplus cement is removed and gold malleted in until the opening is closed.—*American Dental Journal*.

CHILLING WAX IMPRESSIONS FOR INLAYS

By Herman S. Rush, LaFayette, Tenn.

I have had excellent results from the use of ethyl chloride. Spray a small quantity on a piece of cotton, then press the cotton around the tooth and exposed surfaces of the wax, when properly formed in the cavity. The volatilization of the ethyl chloride is responsible for the rapid chilling, after which the wax form can be removed with a feeling of security that it has not changed shape. The finished inlay, if properly invested and correctly cast, will be perfectly seated in the cavity.—*American Journal of Dental Science*.

SOCIETY ANNOUNCEMENTS

THE NATIONAL ASSOCIATION OF DENTAL EXAMINERS

THE twenty-seventh annual meeting of the National Association of Dental Examiners will be held at the "Hotel Chamberlain" Old Point Comfort, Va., first session opening at 10 o'clock A. M., Monday Aug. 2nd and continuing the 3rd and 4th.

The result of the mail vote by the committee to ascertain the consensus of opinion as to place and date, from Oct. 19th to the present date was 91 votes for Old Point Comfort the first three days of August; 13 for Birmingham in March; 7 for Birmingham in July. The President has, therefore, selected Old Point Comfort.

The rates will be American plan, \$3.00 per day, without bath, \$4.00 per day with bath—large and commodious meeting rooms will be furnished free—railroad and steamship rates will be furnished at a later date.

CHARLES A. MEEKER, D.D.S., Secretary.

COMPLIMENTARY BANQUET TO DR. C. R. BUTLER

The dental profession of Cleveland, Ohio, will give a complimentary dinner to one of its most honored members, Dr. C. R. Butler, on March 11th, 1909, at seven o'clock P. M., in commemoration of the completion of fifty-one years of dental practice by the doctor. This will be a democratic affair to which all ethical dentists are invited. The price per plate will be within the reach of all. Those desiring a place at the banquet will kindly notify the secretary at least ten days before. The banquet will be at the Hollenden Hotel.

DR. S. B. DEWEY, Secretary.

Lennox Building, Cleveland, O.

NEW JERSEY STATE BOARD OF REGISTRATION

The New Jersey State Board of Registration and Examination in Dentistry will hold their semi-annual examination in the Assembly Chamber of the State House, Trenton, N. J., beginning Tuesday, July 6th, and continuing through the 7th and 8th. Practical examination held on the 6th. Theoretical examination 7th and 8th.

Applications must be in the hands of the secretary 10 days prior to the examination. Charles A. Meeker, D. D. S., Secretary of the Dental Commission, 29 Fulton St., Newark, N. J.

CLINIC FIRST DISTRICT DENTAL SOCIETY, MICHIGAN

The annual all-day clinic of the First District Dental Society, State of Michigan, will be held at Detroit on Saturday, Feb. 13, 1909. For full particulars address, J. A. Walker, Secretary, 284 Grand River Ave., Detroit, Mich.

The Thirty-ninth Annual Meeting of the Wisconsin State Dental Society will be held at Milwaukee on July 13, 14 and 15, 1909. For further information, address Harvey N. Jackson, Wells Building, Milwaukee Wis.

NATIONAL DENTAL ASSOCIATION

The Thirteenth Annual Session of the National Dental Association will be held in Birmingham, Ala., March 30 and 31, and April 1 and 2, next.

Dr. James McManus, of Hartford, Conn.; Dr. E. C. Kirk, of Philadelphia, Pa., and Dr. L. C. Noel, of Nashville, Tenn., will present essays at the General Session.

A complete list of the sections, with a full list of clinics, railway rates, etc., will be announced in the next issue of this journal.

All preparations for the meeting are well advanced, and a large attendance is assured.

UNIVERSITY OF BUFFALO DENTAL ALUMNI ASSOCIATION

The tenth annual meeting and clinic of the Alumni Association of the Dental Department of the University of Buffalo will be held on Friday and Saturday, Feb. 19th and 20th, 1909, in the Dental Building. An excellent program is being prepared. All graduates and ethical practitioners are invited to attend and participate in the meeting. Harry F. Tanner President; Abram Hoffman, Ch. Executive Com.; George B. Mitchell, Secretary, 483 Main St., Buffalo, N. Y.

VERMONT STATE DENTAL SOCIETY

The thirty-third annual meeting of the Vermont State Dental Society will be held at Hotel Berwick, Rutland, Vt., May 19, 20 and 21, 1909. A cordial invitation is extended to all. Thomas Mound, Secretary, Rutland, Vt.

ILLINOIS STATE DENTAL SOCIETY

The forty-fifth annual meeting of the Illinois State Dental Society will be held at Danville, May 11, 12, 13, 14, 1909. R. J. Hood, Secretary, Sparta, Illinois.

AFTERMATH

Newsy Notes

Dr. Jesse Cope Green, of West Chester, Pa., received numerous callers on the occasion of the celebration of his ninety-second birthday anniversary. He still continues practicing his profession of dentistry, and almost daily rides his bicycle about the streets of town.

He never smoked or chewed tobacco, nor has taken a drink of intoxicating liquor. He has been treasurer of the First West Chester Fire Company continuously for the past 60 years or so.

Dr. R. H. Greer of Mansfield, Texas, prominent in the dental profession, will endeavor to interest the dentists of the state in the fight against tuberculosis. Dr. Greer is secretary of the Young Men's Democratic Clubs of Texas. The directors of the Texas Anti-Tuberculosis Association recently requested Dr. Greer to aid in the anti-tuberculosis movement. He will undertake this mission at an early date.

The home of Dr. Charles C. Linbarth, a dentist, at Brooklyn, was ransacked by thieves, Dec. 20, while the doctor and his wife were out walking. The thieves took all the gold used in filling teeth, the dentist's silver handled instruments and jewelry and Christ mas presents that were locked in a safe.

The intruders went through all the sixteen rooms in the house, leaving a trail of broken cut-glass, bric-a-brac and ornaments. The stolen goods were valued at \$1,800.

Dr. Alfred Owre of the dental department of the University of Minnesota and his companion, Dr. Forest H. Orton took a health walk from Chicago to Minneapolis recently. They made the trip, 420 miles, in nineteen days.

The first appointment of Governor Warren Garst during his short term in office was made recently when he named Dr. C. V. Conzett of Dubuque, to succeed Dr. W. H. DeFord of Des Moines, as a member of the state board of dental examiners. Dr. DeFord resigned to assume the deanship of the new Drake dental department.

St. Louis Society of Dental Science elected the following officers: Dr. W. E. Brown was elected president; C. C. Simpson, vice president; G. E. Hourn, secretary; C. S. Dunham, treasurer and J. E. Winklemeyer, librarian.

Maryland State Dental Society. The following officers were elected for 1909: President, Dr. J. W. Smith; first vice-president, Dr. T. O. Heatwole; second vice-president, Dr. F. P. Haynes; recording secretary, Dr. W. W. Dumbracco; corresponding secretary, Dr. F. F. Drew; treasurer, Dr. H. A. Wilson.

California State Dental Examinations. Sixty one candidates, of which thirty-eight were successful.

Idaho Dental Board Examination.—Seven candidates; seven passed.

The following officers were elected during the sixteenth annual meeting of the Institute of Dental Pedagogics, held in the Planters Hotel, St. Louis, Dec. 30th, '08 to January 1st, '09. President, Ellison Hillyer, Brooklyn, N. Y.; vice president, John Q. Pyram, Indianapolis, Ind.; secretary treasurer, B. E. Lischer, St. Louis, Mo.; member of executive board, D. H. Squire, Buffalo, N. Y.; Member Commission on Text-books, H. F. Friesell, Pittsburgh, Pa. Next place of meeting, Toronto, Canada, December 28th to 30th, 1909.

- Robberies** Dec. 3.—Dr. Bilyen, Portland, Ore., gold crowns and bridges worth \$40.
 Dec. 7.—Dr. E. E. Jones, Paris, Ill., small sum in cash, together with gold scrap, gold solder and platinum scrap to the value of \$260.
 Dr. F. W. Bell, Paris, Ill., \$25 in gold foil and scrap.
 Dr. Leon Berlau, Paris, Ill., \$30 in gold foil and scrap.
 Dec. 12.—Dr. B. W. Vickery, Atchison, Kan., \$30 worth of gold fillings and scrap.
 Dec. 12.—Dr. Leslie S. Tucker, Seattle, Wash., \$10.50 worth of gold.
 Dec. 14.—Dr. H. M. Viel, Delphos, Ohio, gold and silver valued at \$21.50.
 Dec. 15.—Dr. M. K. Moyer, Norristown, Pa., \$35 worth of gold.
 Dec. 21.—Dr. J. G. Turner, Elgin, Ill., gold and cash amounting to \$150.
 Dec. 23.—Dr. Clem Shidler, South Bend, Ind., small quantity of gold plate.
 Dec. 25.—Dr. C. D. Peck, Sandusky, Ohio, about \$10 worth of gold clippings.
 Dec. 25.—Dr. J. E. Herman, Sandusky, Ohio, pair of gloves and cap.
 Dec. 25.—Dr. H. S. Rogers, Sandusky, Ohio, gold crown.
 Dec. 25.—Dr. C. E. Stroud, Sandusky, Ohio, gold valued at \$6.
 Dec. 27.—Bay City, Mich., upwards of \$100 in gold from the offices of Drs. E. D. Slawson, F. A. Krappol, H. L. Pearsall and L. C. Smith.
 Dec. 29.—Dr. W. P. Lindsey, Cincinnati, Ohio, \$10 worth of dental instruments.
 Dec. 30.—Dr. H. D. Morgan, Youngstown, Ohio, \$25 worth of gold.
 Dr. G. C. Nixon, Youngstown, Ohio, \$25 worth of gold.
 Jan. 2.—Dr. C. E. Rose, Braddock, Pa., \$60 worth of gold.
 Jan. 3.—Dr. W. Callagher, Braddock, Pa., two crowns and gold to the value of \$50.

- Fires** Dec. 15.—New Birk's Building at Montreal, Canada, gutted by fire.
 The following dentists suffered losses, also the S. S. White Dental Manufacturing Company. Drs. Edward T. and Ernest A. Cleveland, Drs. C. F. and J. B. Morrison, Dr. H. Ross Mathews, Dr. Peter Brown and Drs. Wm. J. and A. E. B. Giles.
 Dec. 29.—Dental office of Dr. J. L. Young, Atlanta, Ga. Total loss of \$3,000; insurance, \$1,500.
 Dental office of Dr. W. C. Ward, Garden Grove, Iowa, totally destroyed Jan. 1st. Loss \$900.
 Jan. 1.—Dental office of Dr. Fred O. Sawyer, Skowhegan, Me.

- Deaths** Dec. 10.—Mrs. Caroline Clapp Thomas, wife of Dr. Geo. R. Thomas, at Pasadena, Cal., aged 64 years.
 Dec. 15.—Dr. G. A. Kuncke of Sandstone, Minn., of typhoid fever.
 Dec.—Dr. F. Edgar Thompson of Durham, N. C.
 Dec. 24.—Dr. Wm. G. Gill of Brooklyn, N. Y., aged 67 years.
 Dec. 25.—Dr. Francis Moore of Brooklyn, N. Y., aged 55 years, of heart failure.
 Dec. 29.—Dr. B. J. Harrison of Denver, Col., aged 62 years, of pneumonia.
 Dec. 31.—Dr. J. L. Daily, of Cherokee, Texas, died of apoplexy. Aged 77 years.
 Jan. 1.—Dr. Aaron H. Parker, of Boston, at Brookline, Mass., aged 72 years, of paralysis.

A Talk on Italy and Sicily At the last meeting of the Columbus (O.) City Dental Society, Dr. F. R. Chapman read an interesting paper on: "The Trend of Dentistry." After this paper, Dr. E. C. Mills, by invitation, gave an instructive talk to the Society members, and members of the Ohio Teachers' Reading Circle, invited guests, on the stricken districts of Italy and Sicily. In his travels abroad Dr. Mills made a trip through the territory affected and was familiar with the history of earthquakes, tidal waves and volcanoes of the two countries.

Member of State Board 17 Years Dr. Edward J. Roberts of Augusta, Me., who has just retired from the state board of examiners in the practice of dentistry, has seen a long service in this field. Unlike some of the other boards in the state, it remained practically intact for many years after being organized. Dr. Roberts, from his long experience in the profession and his wide acquaintance in the state, was chosen president of the board at its inception, and for the 17 years up to the time of his resignation, he has remained at the head.

"The enactment of the law creating this board," said Dr. Roberts, "has done much to bring the profession in this state up to a high standard. We have had to do with a large number of candidates since the board was organized, and some 200 have succeeded in passing the examination. The Maine dental society was organized in 1865, and it was through the influence of this society that the board was created in 1901.

"There were a number of irresponsible parties engaged in the profession before this board was organized," continued Dr. Roberts. "As showing the recklessness with which certain persons plunged into the dental profession, I recall one instance in Knox county where a man developed in a 'jiffy' from a farmer to a full fledged dentist, simply because someone discovered that he had a pair of big forceps with which he was wont to pull hogs' teeth. From hogs it was but a step with him to men, and it was not long before he was improvising a form of teeth which he made and sold as the genuine article. I believe we have today in Maine as fine and competent a set of dentists as are to be found anywhere in New England."

Dr. Roberts has been engaged in the practice of his profession in Augusta for 38 years and always in the same office.

Physicians Barred from Practice of Dentistry Practicing physicians in Minnesota have no right to tamper with their patients' teeth. If they do, they are liable to arrest and fine. A doctor of Minneapolis didn't know this and must pay \$5 because he extracted two teeth from a patient's mouth. But he wasn't entirely to blame for: nobody else knew it until the supreme court handed down a decision in his case.

The doctor was fined, and then appealed to the supreme court from an order denying a new trial, claiming that a licensed physician had the right, incidental to his profession, to treat the teeth of a patient.

But the supreme court holds that the legislature has seen fit to separate dentistry and medicine and require a license to practice either, and if a man wants to practice both he must have a license for both professions.

Report of Connecticut Board The biennial report of the State Dental commission to September 30, 1908, issued December 29, in the form of a 24-page booklet gives much interesting information about the work of the commission and shows that the standard of dentists in Connecticut is being raised to a very high degree.

Four examinations of candidates have been held by the commission in the last two years. November 7, 8 and 9, 1906, 13 candidates received licenses. June 13, 14 and 15, 1907, 20 candidates received licenses. November of that year 14, and June of this year 23 were admitted to the practice of dentistry.

Under the head of prosecutions the report states that the commission will do all in its power to secure proper convictions of any violation of the dental laws of the state.

To Examine Teeth of School Children The dentists of Leominster, Mass., met December 7, with Thomas E. Thompson, superintendent of schools, at which time arrangements were made for the examination of the teeth of school children free of charge. It was decided that the dentists by an arrangement satisfactory to themselves should divide the schools between them, and examine the teeth of the children at their convenience.

Enterprising Wheeling Dentists The ethical dentists of Wheeling, W. Va., have published, and distributed, an appointment book, 1909. The object of the publication is to "boom" the West Virginia State Dental Society which meets in Wheeling, Oct. 13, 14 and 15, 1909. A unique feature of the book is the sayings printed at the top of each page; sayings such as these: "I resolved New Year's to go to Wheeling Oct. 13-15, 1909. Did you?" "We are going to make this meeting a record breaker. Are you with us?" "The Society is a post-graduate school. Meets at Wheeling, Oct. 13-15, 1909." "As iron sharpeneth iron, so the countenance of a man sharpeneth that of his friend." "Forget not the assembling of yourselves together, Oct. 13, 14 and 15." "In union there is strength, likewise knowledge." "Don't be a piker. Come and do your share—Oct. 13, 14, 15." "Opportunity knocks once at every man's door. This is your time." "Get aboard the band wagon, bound for Wheeling, Oct. 13-14-15." "If you know everything we need you. Come anyhow." "If you don't know everything, you need us. Wheeling, Oct. 13-14-15." "What you learn will benefit your patients. They know it." "You will learn something useful at Wheeling, Oct. 13-14-15" and there are about ninety more sayings of a similar nature in the book.

This is certainly a unique way of booming a society meeting and should be a most effective one. It shows the right spirit and enterprise among the Wheeling dentists and if the other dentists in West Virginia have as much "push," their newly formed State Society will soon be made one of the best in the country. Watch it grow!

Broken Engagements The matter of charging for broken engagements has often come up in the courts and it has been decided that the dentist has the right to charge for time actually wasted. That is, if he makes an appointment and the patient fails to keep it and he does not use that time for other purposes of his profession, he is entitled to the same fee he would have earned by performing the contemplated operation. If, however, he does use that time operating upon some other person, he cannot collect from the first party. These rulings are justified by the fact that a professional man's time is the capital whereby he earns a livelihood. If a certain part of that is set aside and not used, the one causing the waste by his failure to arrive at the appointed time should compensate the dentist for this loss of capital. But, if there is no loss, there should be no penalty.—*C. S. Ayers, Pacific Gazette.*

Educate Your Patients The spread of dental knowledge during the last twenty-five years has been accomplished largely by the conscientious dentist, but with all this labor, think how little the average person knows about the dental organs. Here is a portion of the code which should be emphasized, that our mission is not alone to prevent suffering and thus earn a livelihood, but we must be teachers as well. A large portion of our patients are receptive and are willing to accumulate a certain amount of useful information. Do not talk to them in uncertain terms or high sounding phrases, but in the simple language that anyone of intelligence can understand.—*C. A. Cheney, Dental Review.*

The Dental Society Dentists need the dental society, the dental journal, and the instrument maker. Almost every dentist is a deviser of methods of practice and dental appliances. The instrument maker carries out the idea of the designer. The journal advertises them. The society shows how they work; the lawyer or the preacher can stay at home and read his books and think great thoughts; not so the dentist, he must look up the latest devices and see them demonstrated. The society is his post-graduate school.—*Dominion Dental Journal.*

Dr. J. Wesley Dowd, a dentist of Norwich, N. Y., fell on an icy pavement and broke his left arm above the elbow, December 30.

Dental Honesty The only thing to sell anything with is truth. The results are accurate, well known, and therefore scientific. Let the professional man study business science, grasp its fundamental principles and stand by the consequences. Let him make more money in less time by deserving larger fees. Thus he will not only give greater satisfaction to his patients, but he will increase the respect of his profession in the eyes of the world.—*E. J. Perry, Dental Review.*

Prominent Dentist Married Dr. Albert L. Hagerty and Miss Millie Clifford Hawver, of Tippecanoe City, Ohio, were quietly married on the evening of Thursday, January 14. Dr. Hagerty is a very prominent and successful dentist, having been in his profession for ten years in Tippecanoe City. Through his success as a dentist and his genial disposition, he has made many warm friends.

Mr. and Mrs. Hagerty will make their home in Tippecanoe City, where their many friends wish for them a happy and prosperous future.

The sixteenth annual meeting of the Mississippi Dental Association will convene in Natchez, Miss., May 11-12-13, 1909. For further information address the secretary, Mr. L. B. Price, Corinth, Miss.

Mrs. R. Truchsess, who was said to be the oldest woman dentist in this country, died December 14 in Bellevue hospital, New York City, at the age of 78 years.

PICKLING SMALL PIECES AFTER SOLDERING

Test tubes are convenient for quickly cleaning small pieces after soldering. As they are thin and fragile a little care is needed when inserting the work. Do not drop it in, but incline the tube and let slide to the bottom. Convenient and inexpensive holders are to be had for handling the tubes while holding them over a gas or alcohol flame. Do not let the flame impinge upon the bottom of the tube, but a little way up, otherwise its contents may be thrown out by the steam quickly generated. When the work is clean, pour the acid into another tube, and after filling the first tube several times with water the piece may be dropped from the tube into the hand. By this means the pickling is quickly done without the acid coming into contact with the hands.—(T.)—*Dental Brief.*

PAINLESS PULP DEVITALIZATION

By Le Grand M. Cox, St. Louis, Mo.

After removing the superficial leathery decay from the cavity with a spoon excavator, use arsenical fibre moistened in engenol, place a cardboard disc over this to prevent the cement from causing pressure on the dressing. mix cement to a creamy consistency, allowing it to drop from spatula and adjusting itself in the cavity. The engenol is an anodyne, with anesthetic properties, very penetrating, and there is seldom any pain while dressing remains in the tooth.—*Dental Review.*

OUR OPINIONS AND OTHER THINGS

Here's where the publication end of The Dental Summary organization has its say: here are recorded opinions and conclusions that cannot be changed, colored or eliminated by business considerations of any kind, mingled, and more or less pleasantly interspersed, with funnigrams and think irritants. Neither the editor nor any of his valued coadjutants is responsible for statements herein; and the names of the writers will, upon application, be made known to those who have the right to know.

KEEP AT IT.

Brace up! forsooth, the man who quits
Will never win the prize,
Nor climb the dizzy mountain top
Where fame and honor lies.
The chap who works with little vim
Must be a failure still;
Erratic blows won't help you much,
But steady plugging will!

—*Birmingham Age-Herald.*

Better buy an Elgin Casting Appliance.
It makes fun of "plugging."

Write Hermann Boker & Co., 101-1/2 Duane street, New York, for prices and samples of their "Boker" Regulating Wire, Sheets and Ribbons. This material, backed by a house with "Boker" reputation, can be depended upon.

If you are original and enterprising you will be opposed, but opposition will prevent dullness, and criticism is the whetstone on which a genuine man is tempered and polished.

WELL, I GUESS!

Apples in de orchard,
Sweet an' hangin' low;
Rabbit takin' exercise,
Foh footprints in de snow.
'Possum prowlin' roun' de tree
Eatin' till he's stout—
Hahd times honey?
What's you talkin' 'bout!

Columbus, O., Jan. 6, 1909.

We are in receipt of the January Summary, all decked out in its new dress, and wish to congratulate its publishers on the excellence of its appearance, make-up and contents.

It is a creditable product of a worthy house. Yours very truly,

Columbus Dental Mfg. Co.,
W. L. Truesdell, Mgr.

No use burning more coal than you need. The Powers Regulator stands guard over your coal bin. Every degree over 70 is not only dead waste but means a doctor bill soon or late. Write The Powers Regulator Co., 40 Dearborn, Chicago, for particulars. A personal test enables us to recommend it to every man who prefers not to burn his money.

Binding The Dental Summary:—In response to a number of requests, we wish to state that we can bind the 1908 Dental Summary at the following prices:

In two volumes, six magazines each, in full cloth, \$1.00 per volume; in one volume, containing the entire twelve numbers, full cloth, \$1.75.

In two volumes, six magazines each, in half leather, \$1.50 per volume; in one volume, containing the entire twelve numbers, \$2.00.

We can supply almost any number that may be necessary to complete your set, at 25 cents each.

In sending your magazines, let us know whether you want the covers and advertising pages bound or removed.

Cleveland, O., January 8, 1909.

The new Summary is here and it is a beauty. The cover page is a work of printer's art and engraving, a design compatible with the dignity of a dental journal.

The reading matter is increased by a large number of pages and breadth of surface. The tout ensemble is a vast improvement. This includes advertisements as well, for they are educational. You are to be congratulated upon this advance, and I trust the Summary will receive still greater consideration than before.

Very sincerely yours,

W. H. Whistlar.

Difficulty affords heroism its opportunity. Blessed be difficulty.

The satisfaction of knowing that one's collar is always clean is worth more than the cost of Litholin collars, besides the knowledge that one is not being rubbed out of house and home by careless laundrymen. They're waterproof, durable and made in all popular shapes. Write The Fiberloid Co., New York.

SHUT UP.

What's the use of kickin'
In an aimless sort of way?
What's the use of knockin'
If you've nothin' good to say?
Shut up!

What's the use of talkin'
Of the "good old days gone by?"
There's lots to do preparin'
For them that's drawin' nigh,
Shut up!

What's the use declarin'
That the cards is always stacked,
And that nothin's on the level,
For you know it's not the fact?
Shut up!

Set out an' study laughin'
Go on 'an' learn to smile;
You might even tackle singin'
If you practised for a while—
Tune up!
James D. Haverson.

O'Neill, Nebraska, Jan. 12, 1909.

Excuse me for not dropping you a card a month ago saying that for 1909 I would relieve you of the trouble of sending me your journal; but procrastination held me, until the arrival of January number, and it is so good that I claim a man's privilege and change my mind so will bother you one more year.

A. H. Corbett.

Scio, Ohio, Jan. 12, '09

Received the Summary for January in her new dress. Accept my congratulations. The Summary is and has been alright and she looks good in 1909.

Yours with best wishes,
R. D. Wallace.

Ottumwa, Iowa, Jan. 5, 1909

Your January number is received. It is the best that was ever printed.

Armstrong & Armstrong.

Habit is hard to overcome. If you take off the first letter it does not change "a bit." If you take off another you still have a "bit" left. If you take off still another, the whole of "it" remains. If you take off another it is not "t" totally used up. All of which goes to show that if you wish to be rid of a "habit" you must throw it off altogether.

The advertising under the head of general publicity which secures the least number of inquiries, indeed, may be after all the most valuable medium, for it may go to a well-to-do class of thinkers, instead of a class of curious-minded people who like to write letters. To imagine that all advertising that brings in a lot of letters is valuable publicity is a very common mistake.

A man can develop an awful tempest within himself, but it will not break loose if he keeps his tongue tied down.

The reading of your January number has been not only educational but satisfying to an extent that does not occur by reading the other journals. There is no use printing new things these days unless there is an advance apart from "old straw."

We have some good journals and not a few that are—ahem—well, your journal is a decided improvement. I have been telling an old dental friend of the sixties, retired, that your two articles "The Man Buried in the Earthquake," and the "Dean Story" are like the book "David Harum." As I have often said, the first chapter sold the book. So there!

I have long felt that there was a field for an entirely different style of journalism. Yours comes the nearest of anything so far. SUCCESS!

I'll have something for you ere long.

Cordially yours,

G. Alden Mills.

226 Central Park, New York City.

FOR SALE—Practice paying \$5,000 per year. Price, \$1,500. Terms: \$500 cash; balance on easy monthly payments from practice. For particulars, address H. C. King, Box 388, Tonopah, Nev.



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OFFICIAL ORGAN:

The Ohio State Dental Society

The Michigan State Dental Association

The Indiana State Dental Association

The Kentucky State Dental Society

The Virginia State Dental Society

The Northern Ohio Dental Society

The Eastern Indiana Dental Society

The Southwestern Michigan Dental Society

The Lake Erie Dental Society

and Several Local Dental Societies.

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REGULAR CONTRIBUTIONS

BRIDGE ON CONVERGED TEETH *

By W. O. Hulick, D. D. S., Cincinnati, Ohio

CONVERSION of teeth is the coming together, caused by the early extraction of one or more teeth in either jaw, more frequently found in the lower (See Fig. 1). Unfortunately, this coming together is not a straight line, so that when teeth have been lost for some years, those remaining tip over or converge out of alignment, thus making it impossible to insert a replacement of any kind, that is altogether satisfactory in every way.

To make a bridge replacement all in one piece is out of the question. Now, it is safe to say, 10 per cent. of our patients, who require lower bridge replacements, have converged teeth to a greater or less degree; 5 per cent. to such an extent that no replacement is undertaken at all. We have found, from years of experience, that when deprived of grinders, health is impaired, and indigestion and chronic dyspepsia are the result.

One of the best examples brought to my notice was a Mr. McClellan, of Chicago, who was so afflicted, having lost the second bicuspid and first and second molars in the lower jaw, also the molars in the upper jaw, early in life. This was one of the worst cases of conversion I had ever seen. He had been treated by some of the most skilled physicians, both in Chicago

*Read before the Ohio State Dental Society, Dec., 1908.

and in our own city, who repeatedly advised and urged that he have some grinders. A partial denture was inserted, but on account of pronounced conversion and very narrow ridge to receive the denture, it failed. He made two trips back to Chicago, seeking the services of his old dentists for bridge replacements, with the same result each time. No one would undertake the case, so exaggerated was it.

One of my very good friends in the profession recommended that he call and consult me, and I am happy to say, replacements were made for



Fig. 1

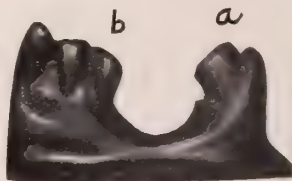


Fig. 2

him that were most gratifying both to him and to myself. This was more than ten years ago, and I only mention it as an instance, also to bring the subject before you as to the obligations we owe our patients.

The greatest obligation we have to discharge is a service that will prevent, or cure disease, and when we do not give service that will do this, we have failed in this great duty. We, as servants of the public, do not always discharge this golden rule obligation, but to my mind, there is nothing nobler or grander to do for those in need of service than the kind of service we would have them perform for us.

It is not my purpose to discuss the merits or demerits of general bridge work. Suffice it to say, I believe in conservative bridge replacements. I do not intend to enter into the hygienic or pathological conditions, as this does not come under this subject. The pathological condition is assumed to be good—sanitary rest with construction of replacement and diligence of patient to keep it so are important.



Fig. 3

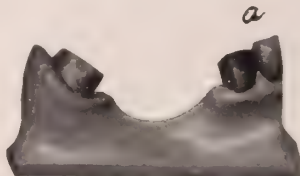


Fig. 4

Many methods have been given us from time to time for a bridge replacement on converged teeth, some very good ones, however, not quite satisfactory, and it was from these the writer has worked out a method that has positively given entire satisfaction in every case.

I will briefly describe a few of the older methods, viz.: The Telescope Crown on a posterior abutment, No. 1, making second cap half length of

first on an angle running from posterior cervical to grinding anterior of abutment, where it was attached to bridged tooth. Another was to grind occlusal of anterior abutment concave, making band with flat top, drill hole in top 1-8 inch in diameter, make cusp with pin with head to fit into hole, attach cusp to bridged tooth. Another and seemingly very good method was to grind posterior tooth to 1-8 inch of gum line having devitalized, making band with flat top, using pins in alignment with anterior tooth. Another, by soldering bar on approximal of posterior crown tooth 1-8 inch

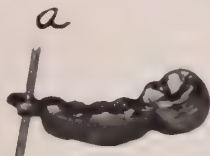


Fig. 5a



Fig. 5b

below occlusal edge of crown, thus forming a shoulder to receive end of bridge, fastening together with bolts and screws. Still another was the making of a Hygienic bridge in two parts, lapping the center with two holes, drilled to fasten together with bolts.

At the National Dental Convention, in Boston, where I gave a clinic on this method for the first time, I was asked if I always used it in extreme converged cases. My answer was, "Always, or no replacement." When I asked for information, many said they ground distal of anterior abutment and approximal of posterior abutment, then sprung the bridge into place. When asked by me, "Would you have a bridge so constructed and sprung into place?" they invariably would answer, "Well, that is different."

Now, it has been my experience that a bridge constructed on these lines does not give satisfaction, decay attacking the cervical of molar, or bicuspid abutments from faulty adaptation, cement washing out and an infiltration of food decomposition, causing the loss of the abutting teeth. I will admit in many cases where there is a slight convergence, satisfactory work can be inserted, all in one piece. My first bridge replacement on converged abutment was constructed by attaching two screw posts to flat top of



Fig. 6



Fig. 7

posterior abutment, making solid cusps soldered to bridged teeth separate from crown, with countersunk holes to receive taps.

In most converged molars, there is no occlusion except on posterior cusps (Fig. 2-a), consequently the gold cusp to be attached to bridge replacement is made wedge-shaped, and quite heavy, thus making it very satisfactory, for the reason that it restored the masticating surface.

Later, for convenience, I used the anterior abutment and with such ease of construction, as compared to the first method, that no other has any place for me now.

A devitalized bicuspid came to my notice at one time, where a bridge replacement was required, and it occurred to me that a post into the root would be the safer and better plan, consequently, a flat top crown (Fig. 3-a) —having ground tooth down 1-8 inch—was made, and to make quite secure from decay I made tube closed at one end, soldered to top of half crown, extending into the tooth 1-4 inch or more. This crown was then cemented to place to serve as abutment for anterior end of bridge (Fig. 4-a). A post was then made of platinum-iridium to almost fit tube, with an enlarged end, cone-shaped: for convenience, I make post 1-4 inch longer than is necessary.

To make this enlargement, a small piece of pure gold is wrapped around the post—22 carat gold plate being used to join the two. Now, place post into chuck on lathe and turn down, tapering from head of pin to the original size of post. To make cusp, place some inlay wax on top of half crown in the mouth, close jaw, to make an impression of antagonizing teeth. Trim down to size of top of half crown, then heat post

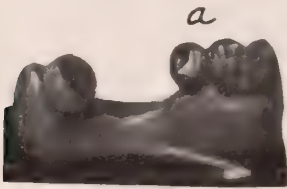


Fig. 8

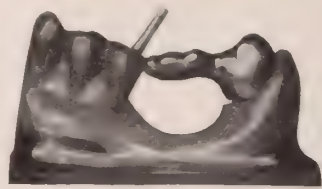


Fig. 9

slightly and insert into tube: chill and remove post and wax, carve down to form occlusion. Remove post, invest wax impression and cast, as you would an inlay, using 20 carat plate gold. We now have a top and cusp for half crown, with hole to receive post, ready for abutment of bridge.

I usually construct bridge up to this abutment, attaching cusp to bridge afterward. To do this, place cusp on to half crown, with post in position, then put finished bridge into place, wax together with sticky wax, ready for impression, using small impression tray, with small amount of plaster. Bridge will not come away with impression: remove, and replace it with cusp and post. Pour model of investing material into impression and after separating, cover all, except part that is waxed, solder with same carat solder used in constructing bridge.

Fig. 5 is constructed bridge with post, a, in position.

Fig. 6 is constructed bridge in position before cementing to place.

In adjusting finished piece in mouth, dry abutments thoroughly, place small amount of cement into tube and on half crown: insert bridge, put post into position (Fig. 7), first having made very small notch in hole in the cusp with a hatch saw, for egress of excess cement.

To make abutments where anterior gold crown is objectionable, or not

desired (Fig. 2-b), devitalize, as you are obliged to do in either case; form cavity of sufficient depth to insure strength. Make tube of platinum, closed at one end, burnish, or swage pure gold to fit cavity: punch hole to receive tube, wax together, remove, and invest. Solder together with 22 carat plate gold, and strengthen pure gold with 22 carat at the same time. Cement to place (Fig. 8-a) and grind cavity smooth with small carborundum stone. The object is to make inlay to protect tooth from decay, and to receive inlay and post, attached to anterior end of bridge. With this inlay and tube in place, proceed as described before.

Fig. 9 is finished bridge in position.

Fig. 10 is finished bridge cemented in position.

Some years ago I constructed a bridge that was most satisfactory in every detail. Patient had lost lateral incisor, first bicuspid and first molar

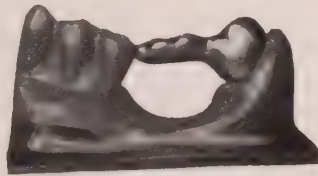


Fig. 10

superior. Second molar, second bicuspid and cuspid were decayed badly, devitalization being necessary. Teeth otherwise in good condition. An ideal case for bridge replacement all in one piece, except for position of root of cuspid, which was out of alignment. Bridge was constructed up to cuspid tooth in the ordinary way. A top was made for cuspid tooth, with band of 35 gauge platinum, with tube closed at one end, cemented to place, same as described; on to this was burnished 35 gauge platinum, or pure gold, to form base. Then made post, as described, around the enlarged portion of which I wrapped platinum foil, same as used for inlay work. Insert in tube, place constructed bridge in position, take impression in the usual way; make model, remove post, grind in facing and back with pure gold; wax with sticky wax, warm post, insert, chill and remove, which will leave platinum foil in position in wax. To hold foil in position while soldering, and to prevent solder filling hole, I used lead pencil point, filled to fit, extending into the plaster, same depth as the original post. Invested in the usual way, soldered and finished. The case was then ready for adjustment, which was done as described in the lower case.

This is another of many cases I could describe, and if followed out, you will have a replacement built on a scientific plan, absolutely satisfactory as to abutments, in the most aggravated case.

DISCUSSION.

Dr. Alden Bush, Columbus: There is one principle that I would wish to apply in using this method in my own practice, and it goes back to something that Dr. Black worked out for us many years ago and gave to us at that time, which he styled "extension for prevention." Of course it was applied to the filling of teeth; but I believe

you will find it good practice to apply the same principle to partial attachments that we use for abutments in bridge work.

In Figure 10 you will notice the attachment or margin of the attachment is carried into the proximate spaces and is not carried to those surfaces which we understand and know as self-cleansing surfaces. I believe that the principle of extension for prevention should be applied and rule us in the controlling of these margins for any such attachment. I believe it would be better practice to carry the margin of the attachment beyond the proximate spaces—to the self-cleansing surfaces which includes carrying it beneath the gum margin at the cervical, and thus guard against the pathological conditions which the doctor said he did not discuss, but I believe we have to reckon with, because it has to do with the stability and permanence of the work. Where cleansing spaces have been provided as in Figure 10, and it is possible for the patient to keep that margin clean by manipulation of the tooth brush, there is yet the possibility of recurring decay, and in case it does come, it is very troublesome.

Just in proportion as the margins of this style of attachment or any other bridge attachment are inaccessible, or the possibility of keeping them clean is precluded, the liability of decay or recurring decay is increased.

These remarks are not intended to be given in a spirit of criticism, but are meant to be supplementary only.

I wish to congratulate the essayist on offering such an excellent plan of procedure, which does much to simplify the construction of satisfactory bridges for these troublesome cases.

PORCELAIN AND GOLD INLAYS

By A. W. Starbuck, D. D. S., Denver, Colorado

Superintendent of Infirmary, Colorado College of Dental Surgery

(Continued from Page 118, February Summary.)

EQUIPMENT.

Before taking up the manipulation of the porcelain, I wish to say a word in regard to the necessary equipment.

It will be noticed that very few burnishers were mentioned in the making of the matrix. There are several sets, of from ten to fifteen instruments each, upon the market. These are good, but an unnecessary expense to the man who does not expect to make a specialty of porcelain, and even if he has this in mind, he has discarded all but one or two before he reaches the point to be called a Specialist. The writer seldom uses anything except the S. S. W. amalgam burnishers Nos. 33 and 34. In these we have two sizes of ball burnishers, two flat burnishers, the edge of which also works very nicely to draw the matrix into the angles of the cavity, and the angle between the ball of the burnisher and the shank, makes a very good substitute for the notched burnisher commonly used to burnish over the cavo-surface angle of the cavity. Thus the two instruments are really equivalent to six. Besides the two burnishers, the only instruments used were a pair of locking pliers and a pair of small shears for trimming the matrix.

In buying a supply of porcelain it is well to procure the whole set of colors, even though some of them are seldom used.

The selection of a furnace depends entirely upon the operator's surroundings. If he is located where there is nothing but a night current of electricity, or no current at all, he will have to get along with a gasoline furnace. While, if there is a day current he should not stop short of an electric furnace with a pyrometer attachment. The time is coming when a man will be just as much out of place with a furnace without a pyrometer as he would be with a vulcanizer without a thermometer.

The proper baking of porcelain should not be underestimated. Many a good inlay has been ruined because the dentist thought he could time his furnace or tell by the glow of the muffle.

If you have no day current you can get very satisfactory results with the use of a device designed by the writer after the suggestion of Dr. Woodbury, of Council Bluffs, Iowa. Obtain a soapstone crayon from a book store or a dealer in metal workers' supplies. Take a piece two and one-half inches long and shape, as in Fig. 41. At "A" it is simply made smaller to make a more convenient place to get a hold with tongs in putting in and

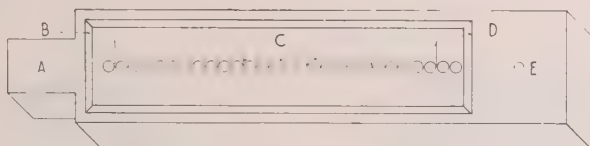


Fig. 41.

removing from the furnace. From "B" to "D" it is hollowed out about 1-16 of an inch to prevent the gold dropping into the furnace. "C" is a series of small depressions made with a large sized cherry bur. These should be as close together as possible without running into each other. "E" is a hole extending almost through the block and is used for holding crowns while baking and also acts as a "center" for placing the inlay. As all gasoline muffles are hotter in the rear than in the front there is a certain point, between "E" and "D", at which the pure gold will melt, exactly the same time that a higher fusing porcelain reaches a proper bake, when placed directly over "E" which is in a hotter portion of the muffle. Pure gold should always be used and by a little experimenting one can regulate his pyrometer by shifting the pellet of gold from one hole to another so that he may get any kind of a bake he desires, from a biscuit to a high glaze. The inlay should be placed at exactly the same spot each time and the slab placed in the muffle exactly the same distance each time. A mica door should be used and the slab and work should be removed just as soon as the gold is seen to melt. The same device will work in electric furnaces, but not so well as the heat is more uniform throughout the muffle.

SELECTING THE COLORS.

Many methods have been used in building up the colors for an inlay. A popular method is to select at least three colors, one for the gingival third, one for the middle third, and another for the incisal third.

Although we are dealing with a substance entirely different from the tooth structure, I believe the best results can only be obtained by following Nature's scheme. In this manner there is a gradual shading from the brownish yellow neck to the blue tip.

We will first consider the anatomy of a tooth. From a practical standpoint all dentine, (unless artificially stained), is the same color, namely, a brownish yellow, and all enamel is blue. If this one point is remembered by the beginner, three-fourths of his trouble will be eliminated. It is so common to find a man trying to use every color in the outfit, when in reality two or three colors properly applied will meet almost every requirement, except in discolored teeth.

A longitudinal section of a tooth will clearly show the relation of the enamel and dentine, Figs. 42-43. It will be noticed that the enamel at the neck is thin and the dentine predominates decidedly, while at the tip the enamel predominates. As the dentine is of a brownish yellow color and there is very little blue enamel covering it in the gingival third, naturally the tooth would have the color of the dentine, while at the tip, where



Fig. 42.



Fig. 43.

there is practically no dentine, it would take the color of the enamel, and in the middle third, where the dentine and enamel are more nearly equal, we find a composite of the two colors or a greenish gray.

To prove that it is a difference in quantity of dentine and enamel, and the relative proportions of each, that gives us the various shades in teeth, rather than a difference in coloring matter, examine a few of the patients who present themselves. Patient A—, we will say, has a decidedly yellow tooth. On examination we will find the crowns are short and labio-lingually they are very thick. The dentine extending to the cutting edge, Fig. 42. Patient B—has a light blue tooth; here we find a much thinner tooth labio-lingually, Fig. 43, the labial and lingual plates of enamel come almost together in the middle third, consequently the tooth is light and receives most of its color from the enamel.

In selecting the color of a tooth, get the shade of the dentine as near the gingival as possible where the enamel is the thinnest, and select the enamel at the very tip, where it is free from dentine. Always cover the shade guide with a finger, except an amount in proportion to the tooth. As a matter of convenience, the series of shades should be grouped together, ranging from light to dark. This makes the selection much easier. The normal dentine colors, in the leading makes of porcelain, ranging from light to dark, are as follows:—

White's High Fusing. T, R, P, I, H, J, K.

Brewster's High Fusing: A, B, C, D, E, F, G, H.

Consolidated High Fusing: B, C, D, I, J, K, L, M.

Whiteley's Inlay Porcelain: 3, 4, 5, 6, 7, 8, 23, 24.

Brewster's Gold Matrix: 1, 2, 3.

Jenkin's Porcelain Enamels: 22, 20, 17, 4, 7, 27, 12.

Brewster's Low Fusing: 1, 2, 3, 4.

The colors of the enamels are:—

White's High Fusing: E, C.

Brewster's High Fusing: T, occasionally U.

Consolidated High Fusing: S, T.

Whiteley's Inlay: 13.

Brewster's Gold Matrix: 10.

Jenkin's Porcelain Enamels: 5, 25.

Brewster's Low Fusing: 11.

There is no rule in the selection of colors for discolored teeth. The discoloration is always in the dentine and may be a decided brown or a dark blue or a combination of the two.

In selecting the color for the dentine we may find the color between two shades upon the ring, if this is the case always select the darker shade—for example, if we were using S. S. W. high fusing porcelain and find "I" a little light and "H" a little dark, use "H." It is seldom necessary to use more than one shade for reproducing enamel.

APPLYING COLORS.

In the high fusing porcelains it is advisable to first use a porcelain of different density, as the translucency of these porcelains is so great that if we should use the same porcelain throughout, we would have considerable trouble from shadows and cement, changing the color of an inlay. This porcelain, commonly known as foundation body, should be slightly higher fusing and of different refracting properties. It is not necessary, as some think, that this should be of a different color. On the other hand, better results can be obtained easier by using a foundation body of a color more nearly resembling the dentine.

We will first consider the building of the colors for a gingival cavity. After removing the matrix from the cavity, grasp it in a pair of pliers at some point where there is an excess of platinum.

Take a small portion of the yellow foundation porcelain upon a glass

slab and mix with just enough water to make a doughy mass. There should be no excess of moisture standing upon the surface. A good way of knowing when the mix is just right is to pass the edge of the spatula through the mass, if the halves do not flow back together or break in cutting, the proportions of water and porcelain are correct. Take a small amount of the porcelain upon the point of the spatula and place in the bottom of the matrix, then with the gnarled portion of the handle, jar to place. An excess of moisture, or too much jarring, will have a tendency to separate the particles of porcelain, the heavier going to the bottom, leaving lighter on the surface, thus ruining the quality of the finished porcelain. Just as soon as an excess of moisture appears upon the surface it should be removed either by bits of blotting paper or by touching the damp porcelain to the dry powder, then removing any that may stick with a dry camel's hair brush. This foundation porcelain should in no case

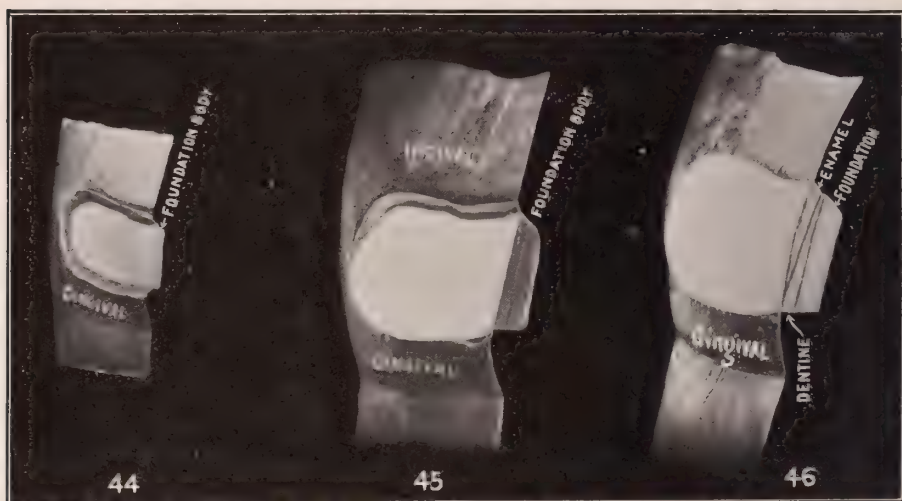


Fig. 44.

Fig. 45.

Fig. 46.

come to the margins of the cavity, but should be built only to within about a millimeter of the surface, as shown in Fig. 44. It is not necessary to use any scheme to direct the shrinkage, such as cutting crosses in the porcelain, varnishing the matrix, etc., as even if the matrix does change, we have an opportunity of re-burnishing, as we left all our margins free. This should be baked to a low glaze.

After reburnishing, grasp the matrix in locking pliers and take a small quantity of the porcelain selected to restore the dentine and carefully fill the crevices caused by the shrinkage of the foundation body. Then add enough of the dentine porcelain to reproduce the dentine of the tooth. Great care should be taken in placing this porcelain, as just the right amount of space should be left for the overlying enamels. The dentine porcelain should be carried to the surface at the gingival, receding gradually as the incisal is approached, Fig. 45. If the shrinkage is excessive,

a second bake may be necessary. This should also be baked to a low glaze, and, in fact, every bake until the last, otherwise the porcelain would be overbaked on the finish. Next, restore the enamel with the blue porcelain, Fig. 46, never building it beyond the margins as the amount of shrinkage is very uncertain. If the shrinkage brings the surface below the proper contour, add sufficient to restore the shrinkage.

Do not try to make inlays in a hurry. If a few extra bakes will give a better result, do not try to do it all in one.

(To be Continued.)

THE MAKING OF ACCURATELY FITTING DOWEL CROWNS FROM IMPRESSION OF ROOTS

By Wm. D. Hays, D. D. S., Greensburg, Pa.

THE making of dowel crowns from impression of roots is only another form of inlay work, which does away with the painful operation of fitting bands to roots in the mouth. A few years ago Mr. R. P. Lennox, of Cambridge, England, conceived the idea of making dowel crowns from a model of the roots to be crowned, and patented an outfit for taking the impression. He used plaster for his model and made the crowns over it, but the writer has had much better results from using copper amalgam for dies over which is swaged or burnished a piece of platinum or gold. The accuracy of this method cannot be questioned if the details are carefully followed.

The above mentioned "outfit" consists of two measuring posts with slides for fixing the depth of the root canal. The root canal posts for giving direction of the root canal, each of which is furnished with a roughened copper tube for giving a metal lining to the canal. A number of cone-shaped cups, with an opening in the vertex, through which pass the canal posts for taking impression of the root. Several impression trays with slots in the floors for the general impression.

To crown a bicuspid root, enlarge the canal with a twist drill 13 or 15 gauge to the desired depth.

If the root is decayed or broken below the gum, select the proper size cone cup, pass post through vertex, into the cup and around post, build King's crown impression composition (See Figure 1). Slightly warm over alcohol lamp or Bunsen burner, place post into canal and force cup against the root face and gum. Cool with a little cold water, remove, trim away the superfluous composition and replace on root. With a suitable tray, with slot in floor, take another impression with plaster (Figure 2). Attach post to tray with a little hard wax, place copper tube (A) over post, carefully mix copper amalgam and pack thoroughly into composition impression of root and around tube. Coat plaster with separating fluid and pour plaster, allowing sufficient time for amalgam to harden, remove model from impression and we have (Figure 3) a plaster model with an



Fig. 1



Fig. 5



Fig 6



Fig. 8



Fig. 2



Fig. 3

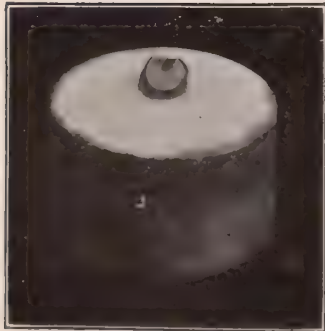


Fig. 4



Fig. 7

indestructible metal reproduction of the entire root to be crowned. After adjusting the wax bite and getting the articulation the crown is completed.

(B) shows plaster model; (C) the extent to which copper amalgam can be used; (D) root with copper tube.

To make a porcelain faced crown, such as is shown in Figures 5 and 6, take a piece of 34 gauge 24K gold—oil the surface to protect it from the mercury—and either swage with rubber or burnish over an amalgam die (Figure 4). A round post, same gauge as twist drill used for enlarging the root of iridio-platinum, is forced through the gold. The one side having first been filed flat to keep the crown from rotating when set. The facing selected, backed and soldered, or the gold may be cast against the porcelain and cap as in Figure 5. The root is beveled labially slightly beneath the gum line, mesially, distally and lingually not to the gum.

Figure 7 shows a badly decayed root over which was burnished a piece of platinum (Figure 8), and an all-porcelain crown made which is doing excellent service. The porcelain body was packed almost dry into the matrix (Figure 8) and the pin and platinum gently worked from the model and given the biscuit bake. The pin, matrix and porcelain were replaced on model, crown built up with porcelain and completed in three bakings. The platinum was removed and crown set with cement.

Any number of crowns can be made for the anterior teeth from one impression with the same degree of accuracy that we can make porcelain or gold inlays.

ANTAGONIZING OF COMPLETE ARTIFICIAL DENTURES*

By George H. Wilson, D. D. S., Cleveland, Ohio

THIS demonstration consisted of showing the use of the Snow New Century Articulator, Face Bow and Bite Guides, in connection with a simplified method of antagonizing complete dentures.

The casts, occluding and contouring models, mounted upon the New Century Articulator, with the Face Bow are shown in Fig. 1.

The antagonizing of artificial denture is purely mechanical, therefore a laboratory operation. The expression, or esthetics, is developed with the patient at the chair.

There are certain lines in the ideal or normal arrangement of the teeth that must be observed in their temperamental modifications. These ideal lines are the arc of a circle described by the six anterior teeth, the straight, diverging line of the buccal surface of the bicuspid and molars, the compensating curve of the occlusal surface of the bicuspid and molars, and the lateral inclination of the teeth. The twelve anterior teeth are arranged in

*Given as a clinic at the Semi-Centennial Jubilee Meeting, Indiana State Dental Society, 1908

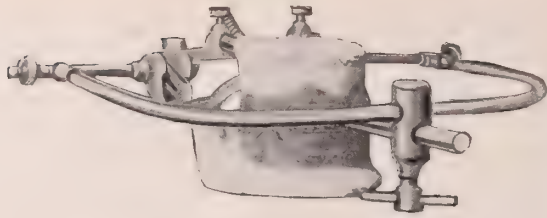


Fig. 1



Fig. 2

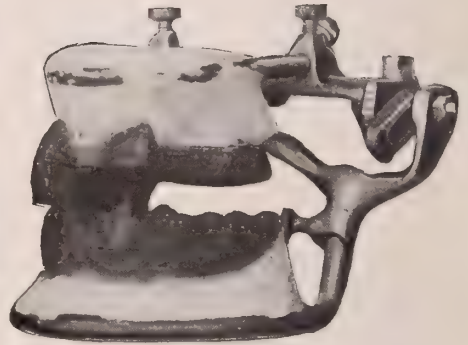


Fig. 3

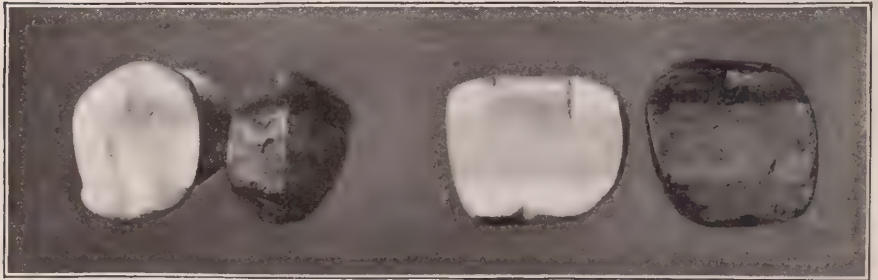


Fig. 4

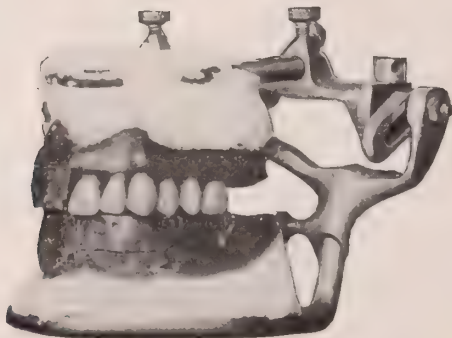


Fig. 5

a straight occlusal line and the compensating curve is formed by the elevation of the teeth distal to the first molar. This is shown by the photograph of a skull exhibited in Fig. 2.

The portion of wax representing the upper teeth upon either side of the mouth should be removed bodily—that is, the segment of wax bounded by the median and the high lip lines upon either the left or the right side of the upper wax model. This leaves the wax contour of the gum portion intact (Fig. 3). The six teeth, having been properly ground (Fig. 4), are set in place to restore the contour of the removed wax (Fig. 5). The incisors and cuspid should be given such variation from the normal outline as the judgment of the esthetist dictates; this arrangement, however, will

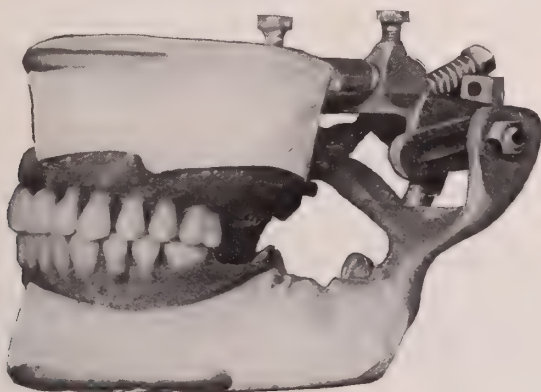


Fig. 6

be subject to change when the dentures are tried in the mouth. The bicuspid and first molar are given the lateral inclination indicated by the pitch of the condyle path; and the morsal edges and surfaces are arranged on a straight occlusal plane. These six teeth are secured with wax. This same procedure is applied to the opposite side. The twelve upper teeth are now mounted to a straight occlusal plane as was seen in Fig. 2.

The lower wax rim, one side at a time, is cut away and the teeth are arranged in their relation to the upper ones. The bicuspid and molar must perfectly interdigitate, while the incisors and cuspid should be just free and but slightly underlap the upper ones. The teeth should now be placed in a lateral occlusion, and such corrections should be made as may be necessary. The six teeth on the opposite side are treated in the same manner. Twenty-four teeth have now been arranged in sections of six, and all are mounted to a straight occlusal plane (Fig. 6). The wax securing these teeth to the base-plate should be thoroughly cooled. The lower second molar upon either side is to be placed next. The placing of this one tooth forms the compensating curve. This tooth is easily located by cutting away the hardened wax in the location of the second molar and by supplying well-softened wax. The tooth should be placed at an angle parallel with the condyle path and in a little more elevated position than will be required when adjusted. The condyle path upon the side of the articulator

on which the molar is being adjusted is grasped with the thumb and forefinger, and both arms of the articulator are firmly held in the palm of the other hand. By repeatedly placing the teeth in the lateral and incisal occlusal positions, the second molar will be properly located in the softened wax (Fig. 7). It may be necessary with the thumb and finger to aid the direction of the tooth. It is apparent that the wax supporting the twenty-four teeth must be cold and hard while adjusting the second molar in the soft wax. The second lower molar upon the opposite side is mounted in like manner.

As the upper second molar can occupy but one position, all that remains to be done is to cut away sufficient wax to permit the tooth to drop into occlusion, and to make it fast with melted wax.

Is it not evident that in constructing a full upper and lower set of teeth, the only triangle that is necessarily given practical consideration is



Fig. 7

the small triangle formed by the upper first molar and the lower first and second molars? The key to the correct anatomical antagonizing of complete dentures is represented by these three molars. If this conclusion be correct, then it follows that when the teeth are placed in incisal occlusion there can be no cusp contact except between the anterior teeth and the upper first molar and the lower second molar; because, if the twelve teeth in each dental curve or arch have a straight occlusal plane, and if one end be raised, there can be no contact except at the other end. If there is, however, much length to the cusps of the bicuspid, the upper cuspid may occlude with the lower first bicuspid when placed in incisal occlusion. This is certainly no disadvantage, for as long as there are three points, properly placed and in contact, there can be no tilting. As the teeth are coming in crushing contact progressively, far less power will be required than if all the teeth occlude at the same time. As only about one-fourth of the crushing force can be used with artificial dentures that may be used with the natural organs, any arrangement that economizes force is a blessing.

OBSTINATE PULPITIS*

By Dr. R. L. Spencer, Bennettsville, S. C.

DURING the past year our dental magazines have been crowded to overflowing with subjects of inlays, cast-fillings, new methods, etc.: the once absorbing topic of pyorrhoea has taken a back seat; while pulpitis, upon the proper treatment of which depends the future existence of a tooth thus affected, seems to be almost entirely forgotten in present day publications. The cause of this, no doubt, is the fact that the majority of exposed pulps yield readily to arsenic devitalization or pressure anesthesia.

It is not the purpose of this paper to discuss pulpitis in general, but to call attention to those difficult cases which are occasionally presented to the general practitioner of dentistry and which cause him great annoyance. From a practical point of view, it matters not with what disease an exposed pulp may be affected, provided it will yield to the ordinary means of treatment, viz., arsenic devitalization or pressure anesthesia; but when the practitioner is brought face to face with an exposed pulp which refuses to be killed by arsenic or anesthetized by cocain, he feels that he is up against the "real thing," and it is here that a thorough knowledge of the various diseases of the dental pulp, and the ability to make a proper diagnosis are of greatest importance.

All diseases of the dental pulp which do not yield readily to the ordinary means of treatment I have termed, "Obstinate Pulpitis," and to this class of diseases I shall endeavor to call special attention.

An eminent authority on the subject of pathology has given us the following complete classification of diseases of the dental pulp:

I. Irritation of the Pulp.

II. Acute Pulpitis—Non-purulent: partial, total; Purulent: partial, total.

III. Chronic Pulpitis—Purulent: partial, total; Hyperplastic: partial, total.

IV. Gangrene of the Pulp—Moist, dry.

V. Degenerations of the Pulp—Eburnification, calcification, ossification, atrophy.

I shall follow this classification in a general way, calling attention to the more difficult classes, giving the methods of treatment that I have used in actual practice, and omitting those classes which do not properly come under the head of "Obstinate Pulpitis."

ACUTE NON-PURULENT PULPITIS.

If this disease is seen in its incipency, it yields to the ordinary means of treatment, but in case the inflammation has become extensive the pulp

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will not absorb cocain, and an application of arsenic causes great pain to the patient. In such cases it is always preferable to reduce the inflammation by the use of anodynes and antiseptics, and then to apply either arsenic or cocain, whichever, in the opinion of the operator, is best suited to the case,

What has just been said in regard to extensive inflammation applies also to total acute pulpitis, which is differentiated from the partial by the color of the blood seen on opening the pulp chamber, it being in the one case venous, and in the other arterial.

ACUTE PURULENT PULPITIS.

Bodecker says that "from a pathological point of view, this disease is divided under the heads of partial and total pulpitis; clinically, however, a differentiation is neither possible nor important." The pain in acute purulent pulpitis is pulsatory; and in those cases where the pulp is covered by a layer of softened dentine or other substance, the tooth is extremely sensitive to heat, but the pain is relieved upon the application of cold. The pain produced by the heat is due to the expansion of gases accompanying the pus in the pulp chamber. As soon as the pulp chamber is opened the gases escape and the pain ceases. The cavity of such a tooth should not, therefore, be sealed again until the entire pulp is removed, thus precluding the use of arsenic. Removal of the pulp can be satisfactorily accomplished by what is known as the "Instillation Method," provided a small quantity of carbolic acid is added to the cocain solution.

PARTIAL HYPERPLASTIC PULPITIS.

This is usually found in molar teeth which are largely decayed in their entire grinding surfaces. In a case of this kind the pulp presents a lobulated or cauliflower appearance on its surface, and has grown out of the pulp-chamber, sometimes entirely filling the cavity of the tooth. The hyperplastic portion is connected with the unchanged pulp within the pulp-chamber, or root-canals, by means of a constricted stem or pedicle. In a tooth thus affected no pain exists beyond a sensation of uneasiness. A probe can be introduced into the cavity for a short distance without producing pain, but it will usually cause a profuse hemorrhage. The hyperplastic portion should be cauterized with carbolic acid and then quickly cut off with a sharp instrument. The remaining portion of the pulp can be easily extirpated with cocain and carbolic acid.

TOTAL HYPERPLASTIC PULPITIS.

This is one of the most difficult diseases that the dentist is called on to treat. It usually occurs in pulps largely exposed, yet it sometimes occurs in pulps still covered by softened dentin. Severe pain is seldom observed except when acute inflammation is produced by constitutional derangement, or by irritants coming in contact with the exposed pulp; and when

such is the case, applications of carbolic acid, cocain, aconite, arsenic, etc., fail to give relief. Every attempt at destroying the pulp by means of arsenic results in a painful paroxysm, and a failure to accomplish devitalization. It is said that the pulp can be removed by the use of escharotics. I, however, have seen only a few cases of this disease and in every instance the patient forced me to do the extracting act.

MOIST GANGRENE.

Invariably this affection is the outcome of acute pulpitis, and is easily recognized by its peculiar odor. The treatment given for acute purulent pulpitis applies to this disease also. However, in this connection, it might be well to state, that great care should be used to maintain thorough antiseptis at all times during the treatment.

DEGENERATION OF THE PULP.

Under this head I desire to call attention to what is commonly known as "pulp-stone." These formations of calcareous nodules are the result of slow irritation and not of inflammation, although they often cause acute pulpitis. The symptoms of this disease are somewhat similar to those of total hyperplasia; with the exception, however, that the tooth can be devitalized by a persistent use of arsenic. In several cases of pulp-stones I have attempted pressure anesthesia, but have failed in every instance.

The method which has proved most satisfactory to me and which I have adopted in my practice is briefly as follows: Having applied arsenic to the exposure, I seal the cavity and allow it to remain from four to six days. This partially devitalizes the pulp in the coronal part of the tooth. At the end of this period I follow the arsenic with an application of 50 per cent. sulfuric acid, which I leave sealed in the cavity from 24 to 48 hours, in which time the acid will have so loosened the pulp-stone by absorption that it can readily be removed with an excavator. Even after thus removing the pulp-stone, the portion of the pulp remaining in the root-canals is often alive and a re-application of arsenic will be necessary for its complete devitalization. The course of treatment outlined will be amply sufficient in the vast majority of cases, but there will occasionally occur instances where more extended and repeated applications will be necessary. Only last January I had a case in which I was compelled to apply arsenic three times, and sulfuric acid twice, before I was able to remove the pulp completely.

Doubtless there are those who do not fully agree to all of the various methods of treatment outlined in this paper. To them I will say that I welcome criticism and discussion of this paper, for it is only by a comparison of the results of actual experience that we may hope to progress in our profession.

PRESIDENT'S ADDRESS*

By Edward B. Spalding, D. D. S., Detroit, Mich.

IT is a great pleasure and an honor which I appreciate, to address you as president at this 52nd annual meeting and at our first meeting since the adoption of the new constitution. It is also a great pleasure to see the suggestion of three or four years ago become a reality this year in this unique combination of vacation and convention aboard this beautiful steamer.

The attendance is not as large as we had hoped, but I bid you a most hearty welcome and feel that you who have attended will go home feeling that you have a better acquaintance with the others at the meeting than could possibly have been gained in any other way, and that your time and money have been well spent.

The work and detail of arranging this attractive program and at the same time conducting a steamboat trip for several days has kept our committees having it in charge very busy, and I wish to publicly express my appreciation to them.

As has been said before, this is our first meeting since the adoption of a new constitution, and it might not be amiss to look back over the steps which led up to reorganization.

In 1905 the president, in his address, proposed reorganization. A committee of five was appointed, but nothing was accomplished the next year except to approve the suggestion and to invite Dr. Arthur D. Black of Chicago to present to us the plan used in Illinois which had proven successful. At this meeting, in 1906, a new committee was appointed consisting of Dr. G. C. Bowles of Detroit, Dr. Ward Howlett of Jackson, and Dr. Harry D. Watson of Grand Rapids. This committee soon found it impracticable to do much work when they were so far separated, and that it was quite necessary in carrying out the work for all the members of the committee to be located in the same city. Nevertheless, a constitution similar to that adopted in Illinois was presented at the Saginaw meeting in 1907, and adopted. It was decided at this meeting to leave the work of reorganization in the hands of a committee of three to be appointed by the president. The committee appointed was Dr. M. L. Ward, chairman; Dr. G. C. Bowles and Dr. Don M. Graham, all of Detroit. I wish publicly to congratulate that committee for the excellent work they have accomplished and which you will know when their report is made. I wish to say that I do not believe there has ever been a committee of the state society that has devoted as much time, hard work and earnest thought to the interests of the society in a given time as has this committee, and few others have any conception of the work involved in reorganization, except those who have been in daily contact with the members of this committee.

If you will bear with me a few moments, I shall try to recall to your

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minds conditions in our state society, in the local societies and in the profession in general in the state which demanded a change. A state organization of any kind is generally understood to be representative of the state in which it exists and stronger than a society representing only a part of it. This has not been the condition of our state society.

The attendance at our annual meetings was often not greater than that of some of our local organizations. Many of the programs were inferior to those of the lesser societies. The active local societies cared little or nothing about the state society and its success, and in one or two instances have been actually antagonistic to it. A man may have belonged to a local society but could see no object in joining the state society; he may, on the other hand, have been a member of the state society with no desire to join or support a local society, even if one existed in his vicinity, and in many instances there was none accessible to him. In short, no relationship existed between the two organizations.

The height of ambition for many men in our state was to hold an office in the state society, after which they seemed to lose all interest in it. It had gratified their own selfish ambitions, so what further use had they for it?

A large number of dentists belong to no society at all and many have never attended a meeting of dentists since graduating from their college. A dentist is a bashful individual, and it is the exception for him to seek membership in a society. He must be wooed and won; he must be shown that association with his professional brothers is of a broadening and helpful influence, that this practically is the only way of keeping in touch with the progress of his profession. He must be made to realize that a man cannot keep abreast of his profession by merely reading the journals, that it is the personal contact which generates sufficient enthusiasm to embrace and put into effect new ideas, that if it were not for our societies we would have few and very poor journals.

There has been a great lack of desire on the part of many of the dentists of the state to do society work, and those who have been on the clinic or program committees know that it has been often difficult, indeed, to obtain enough material for a meeting. Undoubtedly, many good and progressive men in the state have never appeared on our program, simply because there has been no accurate way of knowing or finding out what they were doing.

The treasury of the state society was apt to be in a weakened condition, as dues were hard to collect when many did not feel it necessary to pay their dues unless they attended the meeting of the society. Had our treasurer not been active and capable business man that he was, we would many times have been in debt.

There was no systematized way of soliciting members, and as a result only about one-fifth of the dentists in the state were members of the state society.

Such a state of affairs has not been conducive to the raising of professional ideals among the dentists in the state.

Ethics and professional spirit were lightly thought of, if at all, and unknown to many. Numerous examples might be cited showing how little thought or care some dentists give to the dignity of our profession. One instance of this has come to my notice recently of a dentist in our state who believes himself ethical, placing his picture on his stationery, together with an enumeration of his abilities. Had this man more professional spirit, a keener appreciation of the distinction between a tradesman and a professional man, he would not wish to do this. Association with the better men of his profession would soon raise his ideals. Surely, such conditions as these demanded a remedy, and reorganization was prescribed. The plan we have adopted has been tried successfully in other states, and we are sure our state will be benefited also.

The old organization The Michigan Dental Association—did a good work, but it was only a small number who received the benefit. It is for the new organization to gather in, as fast as possible, the disinterested dentists from all parts of the state by personal invitation through the district societies, to give them programs of helpful interest and encourage them to take part themselves; in other words, the Michigan State Dental Society must begin a broader plan of education among the profession of our state.

The attitude of other professions toward us is not always a complimentary one, but I feel that we are in a measure responsible for their opinions of dentists. We must prove to them that we are professional men and not tradesmen. We must show them that our first object is to alleviate human suffering and that we have professional spirit—that indefinable influence which creates in one a desire to help his fellow practitioner and treat him as a co-worker, not a competitor, and which considers the interest of his patient as above selfish motives. It is opposed to self-lauding, egotism and egoism. It is altruism. It is the desire for the good of the profession and the public and not a valuation put upon everything with reference to how much can accrue to self only. Dr. Robert Arthur said in 1875, in speaking about our profession, "It is a pursuit invested with a degree of dignity based upon the important interest of humanity with which it is concerned, that leads dentists to labor earnestly for this improvement and advancement, and to contend on all proper occasions for the recognition of its just claims."

We should develop and encourage a desire for learning and improvement first and then no one will or can question our right to a just compensation for our services. The reputation gained by self-lauding and certain kind of advertising practiced by some men who call themselves ethical, is of a mushroom growth and duration. What we get out of our profession depends largely upon what we put into it. The satisfaction which comes to a man having the implicit confidence and loyalty of the patients he has served for years and the respect of his professional brothers is more than any purely financial condition he can ever attain.

The machinery of our organization is well installed in several districts of the state—perhaps in all sections which can at present support societies—but machinery without motive force is useless. If the different district societies do not become active, if they cannot encourage and enthuse the new members the coming year, then will reorganization be a failure, for those who have been awakened from their reverie will again become drowsy and will be harder to awaken a second time.

It may not be that every district society can keep up its meetings and enthusiasm independent of outside aid for a year or so, nor would it be entirely best. It is one aim of reorganization that one district may help another and that the members of one society will contribute to the program and ideas of another society. In this way, the dentists of one district of the state are enthused and influenced by what another district is doing and a desire to keep pace results in a friendly rivalry which is helpful to both. The districts should and will be the training schools for the officers of the state society. I believe, on very rare occasions, if ever, should a member be elected to an office in the state society who has not been active, held office and proven himself in his district. If a man has not taken part in the affairs of his district society, how is he to know the requirements of an office in the state society just because he is "a good fellow," for the state society has greater work to perform than to promote good fellowship only.

As you know, under the new constitution, we have the executive council, consisting of ten men who have control of the society, and it is composed of the president, vice-president, secretary, treasurer and six members. This gives a large enough number so that as far as possible each district should be represented in the council. The reason for this is obvious.

The coming year is a critical one for both the state and district societies. In some sections, where district societies have been organized, either there never existed a society before or else the one which did exist had died for lack of interest. In these districts encouragement and help will be necessary from both the state society officers and from members of other and stronger districts.

In districts where societies have existed and held regular meetings there must necessarily be a change in their attitude towards the state society. That this attitude is a loyal and proper one will require constant watchfulness on the part of both the officers of the state society and of their own society.

The election of men to fill the vacancies in the council this year, I feel, should be done with more than ordinary care, and it should be borne in mind that the future of dentistry in the state very largely depends upon how well the principles and spirit of our new constitution are installed the next two or three years.

No office in the society will be more important than that of the secretary. By referring to the By-laws, you will see his prescribed duties are many, but I wish to call your attention to some things that will be required of him. He it is who must know of practically every dentist in the

state. Of course, that is possible only through the secretaries of the districts, who will be required to report to him all dentists belonging to their societies, all dentists in their territory not members, and will seek advice of him in many matters. He will recognize and present conditions which should be brought before the council for consideration and will work with the reorganization committee to see that their work is being successfully carried out in organized districts. Suffice it to say that the secretaryship of the Michigan State Dental Society will be a much more important office than was that of the Michigan Dental Association and that his selection by the executive council should be carefully made.

Development and growth come only through effort and sacrifice.

There are certain dentists in our society who are continually pointing admiringly to the profession of other states and who feel that we do not have a program worth while at any of our meetings unless one or more of the shining lights of some other state appear on it. If these men would spend less time in admiration and in condemnation and more in the development of our own societies, the time would be hastened when Michigan would cease to be a third-rater in dentistry.

What we need in our state are more workers, more members who will make sacrifices for the societies, more men who will give of their time and energy for the benefit of the profession, and then, and then only, will the dental profession of Michigan begin to rank with the professions of other states and with other professions.

THE EDUCATION OF A NATION—TEETH*

By George Zederbaum, D. D. S., Charlotte, Mich.

Chairman Com. on Oral Hygiene and Prophylaxis, Mich. State Dental Society.

WE are gathered here today for the purpose of learning something new—something which, when properly applied, will become of real value to us, as individual practitioners; and, collectively, to the whole profession of dentistry, and through these media be of benefit to our patients—the public.

From the title of my paper, you will readily anticipate that the subject which I am about to present for your consideration deals not with the technico-mechanical lines, but is purely of a literary character. My reason for the selection of this particular subject is two-fold: First, it is of great interest to me; and, second, I am somewhat familiar with the existing necessity for such educational propaganda, and am positive that, at a meeting of this kind, where so many states are represented, and where so many eminent men are in attendance, a larger field will be covered and in a shorter space of time than I could possibly hope for at the usual small gatherings. I was, also, somewhat prompted by Dr. Crouse, of the *Dental Digest*,

who pleaded for a larger number of literary papers and discussions and fewer clinical demonstrations.

We must admit that the exhibition of technical subjects is of great consequence, but, gentlemen, the scientific, the literary part of our programs, must not be lost—if we are to be more educated, more scientific and more on an equal with our half-sister profession, medicine. I am much pleased that the program of today has, for a large part, this very tendency.

President Roosevelt says that the greatest asset of a nation is its health, and one has but to pick up the medical journals and even the current magazines to see that all contain articles calculated for the dissemination of sanitary knowledge, that vital, health-producing subject. Here we see an article on vaccination, on the disinfection of the home; here is one on railway sanitation, and another on the disinfection of the out-houses; another shows an article on sanitary plumbing; there one in large letters reads: "Beware of the flies and the dust," and still another pleads for the better care of the children's eyes and ears. All these subjects have their advocates, and it occurs to me that it is about time that the teeth, those valuable little organs, receive more attention.

I will admit that our own professional literature has, from time to time, especially within the last two years, been awakening the profession to the dire necessity of educating the public in the common rules of the hygiene of the mouth; but, gentlemen, these publications do not reach the public. Outside of these, not more than two or three little articles appeared in our popular literature, calling the attention to the great need of the preservation of the teeth of the nation, in order to maintain anything approaching the normal state of health.

It is not the object of this paper to go into the minute statistics gathered in our country and abroad, showing the need for systematic education of nations in the care of the teeth. We are, by this time, somewhat familiar with the fact that our nation is a great sufferer from dental maladies, and, to say that fully 90 per cent. of the whole population of the United States (excluding those with both full dentures) are suffering from the various stages of tooth decay and its self-sustained sequences of auto-intoxication, is to place it at a conservative figure.

I will give a few numerical facts to prove the assertions made above. Upon examining all the school children in New York City it was found that 12 per cent. suffered from evident malnutrition; 48.8 per cent. from enlarged glands; 72 per cent. from badly decayed teeth, and 27 per cent. from nose troubles; many children being included in two or more of these sets of percentages. Is not such a state of conditions alarming enough? In an Industrial School of New York every one of 394 children examined required some form of dental treatment. There were, in just that 394 young mouths, 1,264 cavities demanding fillings, with a great share of treatments, and 214 permanent teeth (mostly sixth year molars) to be extracted. A report from the Surgeon General of the United States Army states that

1,000 young men were refused enlistment in one year on account of bad teeth, alone.

In my own county, out of 500 mouths of children from the age of six to sixteen, that I examined, I found 450 needing dental attention. In aggregate, there were 2,700 teeth to fill. Estimating at above rate, in my own little county alone, there are, approximately, some 17,000 teeth to be taken care of in the mouths of the school children only, saying nothing of much graver conditions existing in the mouths of the adults.

Only recently the examination of 245 children in Philadelphia showed 3.9 per cent. carious deciduous teeth; 2.9 per cent. chronic enlargement of tonsils; 61.2 per cent. enlarged sublingual glands, and 37 per cent. anaemic, and this report further stated that beyond a few broken and extracted teeth, there was no evidence of dental work in all of these 245 mouths, nor was there among them an owner of a tooth brush. Just think of it—and at this stage of modern civilization, with all the army of teachers of hygiene close at hand!

Our Dr. W. D. Miller said that, to his own knowledge, out of 987 children 99 per cent. were suffering from the caries of the teeth and from putrefactive conditions and swelling of lower glands, of which no physician would be able to make a diagnosis. So much for the United States.

A publication of the British Dental Association reports that out of 10,517 boys and girls examined, averaging twelve years of age, there were 37,105 unsound teeth. In the British Army, in one year, 4,740 men had 7,604 teeth drawn! In one year 5,000 men were rejected from enlistment on account of bad teeth alone. I now learn that the authorities decided at last that Great Britain could not well afford to lose good soldiers on account of bad teeth and that after this, along with other military routine, the soldier's teeth will be examined and taken care of regularly—and mind you, free of all cost! In New South Wales 3,156 children, in all 73,708 teeth, showed 16 per cent. of the permanent and 24.4 per cent. of the temporary teeth in carious condition. In all, 94 per cent. of these children had decayed teeth. In Frankfort, out of 28,673 teeth examined in 1,020 mouths, there were 90 per cent. of carious teeth. In Strassburg it was found necessary to treat 6,282 teeth out of 12,691 examined. Of 2,269 children between the ages of three and four, only 362 had sound teeth, less than 16 per cent. Of 2,103 between the ages of six and eight, only 160 had sound teeth—7.5 per cent. We find that from the first report of the Free Dental Clinic, 2,666 children received treatment. The second year there were 4,967 taken care of, and the third year 6,828, and in this third year's work there were 7,065 teeth filled and 7,985 extracted. And so I could go on indefinitely, quoting statistics showing what a deplorable condition exists in the mouths of our young generation—but that is not the total object of the paper—indeed, I would not feel my task worth a second thought if I could only point out the evils and not be able to show, or, rather, to suggest a seemingly rational remedy. Gentlemen, this is a serious subject and a lengthy one. A whole book could be advantageously written on its various phases. It is my

desire now to point out feasible means for best results in the education of the nation as to the value and care of the teeth. You now have the text of my subject—so prepare for the sermon and the contribution:

In order to properly educate the nation in the care and preservation of the teeth, we must do so, obviously, through the dissemination of such knowledge among the greatest possible number of people, irrespective of classes, or financial standing—they all need it. As I have mentioned elsewhere, I wish to divide this educational propaganda into several of its important phases, the first being *The Prospective Mother*. Some one, on being asked when we should commence to educate the people, said: “When the grandmother is a baby.” I would go a step backward and say, when the grandmother’s mother expects her. We will not argue here as to who was born first, the egg or the hen, but will take it for granted that Adam and Eve are the real sources of all trouble to which mankind is heir. A prospective mother of this age of civilization is not more enlightened as to the real need of her own constitution, nor that of her future offspring, than was the habitat of the garden of Eden. I believe that we cannot commence too early to bring to their attention that as they care for themselves, so will be the health of the unborn babe. We know that the maternal influence, or psychism, if you prefer, has wrought many wonders and many monstrosities in the way of deformities and deviations from the normal. Now, then—if a pregnant woman can, through such psychological influence, deform organs and even the functions of the body, why cannot this hold true also of the teeth and the maxillaries? Dr. Benson of Washington, D. C., said not long ago: “Should the mother be strong and anatomically normal in relation to child-bearing, we have every reason to assume that her offspring, also, will be healthy and well developed.” This being so, we naturally expect to find the dental organs strong and well constituted. Hereditary influences are potent factors for good or evil in the future of the offspring, morally and physically. I believe that the modern way of living is, to a great extent, responsible for the numerous cases of dental deformities that present themselves in our offices almost daily. And I am somewhat of the same opinion as is Dr. Talbot, that man and his progeny are degenerating. Perhaps I am not quite so fond of degeneracy as Dr. Edward C. Kirk says that Dr. Talbot is—but I cannot help but think there is much in his fondness. Where are our fourth molars? We have lost them—have had no use for them for years, and now, even the third molars are disappearing gradually, and—what is the result? Ask the Orthodontist. Our faces are, accordingly, smaller featured, diminishing in proportion to the shortening of the jaws, and the rest of our bodies, in order to still somewhat preserve the semblance of the original man, are smaller and weaker throughout.

We are cognizant of the fact that dental caries is more frequent and is of a more serious class in the female, and, is it to be wondered at when we take into consideration woman’s environment, the influence of the generative organs, the comparatively small number of hours spent in the

open air, the meager physical exercise, the over-indulgence in sweets and pastry, inviting tooth decay and digestive disturbances? So, we readily see we have been predisposing causes aided by the exciting cause of pregnancy. The rapid decay of teeth, seen in most women during this critical period, is not due to the deficiency of lime salts in the blood, as it never has been shown that there is such a deficiency, but it is beyond an iota of doubt that acid eructations, vomiting and regurgitations from a disordered stomach are the real and most potent factors. Statistics show the number of teeth attacked to be directly proportionate to the frequency, intensity and persistence of acid dyspepsia with acid eructations and vomiting.

Dental caries lapping over into, or originating during pregnancy, should receive immediate attention and the cavities should be at once filled, if not in a permanent way, then in a palliative manner, to tide the patient over until such time as her condition will permit of a more thorough operation.

I believe in instructing the prospective mother in the seriousness of the changes that are going on during this period and gradually make her understand why thorough prophylactic measures should be adopted for the mouth and the teeth. No woman, after she understands, and after she is sufficiently impressed with such necessity, will be as negligent in the daily care of her teeth as she would have been if she had not received such instructions. Along with the instructions for the proper care of the mouth, it is within the jurisdiction of a dental practitioner to advise as to the diet. The expectant mother must understand that she should have those foods which have an abundance of lime salts and it would be proper to prescribe hypophosphites of lime or syrup of wheat phosphates, or some such bone-forming elements.

From this class of beginners in our educational propaganda, we will naturally pass to Mothers. Her dreams and expectations are realizations now—she beholds the fact and hears the outcry of her babe—one of the many links of the coming generation. Herein lies the great power of education; since the better is the mother instructed in the proper care of the teeth, the better will she care for those of her infant. Mothers neglect the deciduous teeth because of the fact that they do not comprehend the important part that they play in the future; so, really, it is the lack of understanding on their part, so far as this is concerned. How about the diet of the young? How many out of a thousand mothers nurse their young? A small percentage, I assure you. The first and best food for the infant is its own mother's milk; secondly, I would place the milk from the breasts of others; thirdly, the cow's milk, which has the preference over prepared foods. While I will admit that there are cases when it is impracticable to feed the infant in the natural God-given way, yet many take advantage of such exceptions to shirk their responsibilities. If most of them were informed that every mother has in her milk the very constituents which her child requires, and that it is mostly the daughters of inebriates and of syphilitics that cannot have milk for their infants, there would be more of them

staying at home and attending to the sacred duty of motherhood, and there would be less of them in attendance at the bridge whist club, the afternoon tea, at card parties or at lodges. Dr. Kellogg, in speaking of milk, sensibly said that the cow's milk was poor food for children—it was originally designed for calves, and that a large majority of infants fed on cow's milk are suffering from casein poisoning, dyspepsia, if you please. Ought not the mothers to know these facts? I fear that I am digressing from my subject, but gentlemen, I desire to call your attention to many of these side issues, which, after all, have a direct and important relation to this subject. Don't we know that mothers ought to clean the mouths of their children regularly? Should they not give attention to each individual tooth as it erupts? Should they not be so persistent in this, their duty, that this cleansing of the mouth and of the teeth would become a life habit? Every respectable home has a tooth brush, which the children may use if they wish. So has every respectable home a bath-tub, but no sane mother would say that she had done enough for her child's cleanliness by merely providing a bath-tub! Suppose you offer a boy his choice between a tooth brush and a baseball. Of course, he will want the baseball. So there are certain things which the children want, and they know they want them—base balls are of this class. There are other things which children want, but don't know it. The tooth brush is the very thing they want, the very thing they most need. True, the tooth brush is an acquired taste, but, unlike most of the acquired tastes, it is well worth acquiring. Let us bear this in mind; sons and daughters with defective teeth will soon become fathers and mothers of next generations. What about the claims of their children, unless the father and mother of today do their duty by these parents-to-be and give them a chance to grow up healthy men and women?

(*To be Continued.*)

PHYSICAL DIAGNOSIS AND ANESTHESIA *

By W. H. O. McGehee, D. D. S., M. D., Richmond, Va.

THE following paragraphs are intended to be more in the nature of a plea for an increased recognition on the part of the dental profession of the importance of a knowledge of the subject of Physical Diagnosis and Anesthesia than a scientific discussion of the *modus operandi* of conducting a physical examination and administering an anesthetic.

Physical Diagnosis and Anesthesia for Dentists is a subject which has interested me for some time, and for the past two years I have been engaged in a practical as well as theoretical investigation of the intricacies of the science. This being the case I desire to lay before you some of my reasons for a belief that the dental profession should investigate this subject more generally, and in doing so I shall take the liberty of discussing some of the elementary and didactic phases of Physical Diagnosis, as well as give a

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brief review of some portions of the physiologic action of certain anesthetics.

Physical Diagnosis, as well as Anesthesia, are subjects to which the dental profession has devoted too little attention in the past. Beyond the daily administration of a few local anesthetics and the occasional resort to nitrous oxide and somnoform, the majority of dental practitioners have left the investigation of this realm of anesthesia to the general practitioners of medicine. Even these anesthetics which are used, are, in the majority of instances, administered without due regard to the physical condition of the patient.

It is surprising to find how limited a number of dentists ever resort at all to the administration of general anesthetics. The majority of those who do not, give as their reasons either that the risks are too great, or that the compensation does not justify the time consumed.

It always has seemed to me that both of these are poor excuses, being unjustifiable on account of the fact that, as practitioners of a branch of the healing art, we should always be ready and willing to serve our patients, where the resort to general anesthesia is justifiable for the relief of suffering, regardless of the time consumed or the personal risk involved.

We are claiming to be specialists in medicine. We will never receive the recognition which is due us as such, until we broaden our field of usefulness, look more to the medical side, if I may term it such, of our profession, and emphasize less the importance of the mechanical side. Mechanics is an important phase of our work, but dentistry is not mechanics. Mechanics is simply a means to an end, that end being the treatment and prevention of pathologic conditions arising in the mouth.

I take the ground that an increased knowledge of the proper administration of general, as well as local anesthetics, and a certain degree of experience in the proper methods of making a physical diagnosis, along with greater attention to prescription writing and other medical procedure, would be of great value to the dental profession in many ways.

I have been pleased to note a gradual awakening on the part of our profession to the importance of a greater knowledge of the subjects of physical diagnosis and anesthesia. I find that they are being given some attention by several of the dental schools in this country, and I hope the day is not far distant when they will be included in the curriculum of them all.

I do not wish to be misunderstood as urging an indiscriminate and unnecessary use of anesthetics on the part of the dentist. In an article which appeared in the dental magazine some time ago, Dr. Edward C. Kirk decried the increasing tendency toward the indiscriminate use of analgesics. I agree with Dr. Kirk in the position which he took with reference to that question. I am simply taking the position that we should increase our knowledge of the proper methods of, and the proper physical condition for, administration of anesthetics, and more especially general anesthetics, in order that we may the more intelligently perform our duties as allevia-

tors of the sufferings of humanity and increase our standing as practitioners of a branch of the divine art of healing.

The world is indebted to the dental profession for the introduction of artificial anesthesia. Dr. Oliver Wendell Holmes created the words "artificial anesthesia," and wrote the following memorable lines in 1847: "Nature herself is working out the primal curse which doomed the tenderest of her creatures to the sharpest of her trials; but the fierce extremity of suffering has been steeped in the waters of forgetfulness and the deepest furrow in the knotted brow of agony has been smoothed forever."

Dr. Samuel D. Gross said, "if America had contributed nothing more to the stock of human happiness than anesthetics, the world would owe her an everlasting debt of gratitude." Dr. Gross would have been nearer right and much more just had he substituted the words "dental profession" for the word "America."

If the world, then, is indebted to dentistry for the introduction of anesthesia, dentistry surely owes it to herself to become better acquainted with the methods of administration and the contra-indications against the use of anesthetics.

As mentioned in the beginning it is not my intention to enter deeply into such a broad subject as Physical Diagnosis and Anesthesia, for time would not admit. I shall simply endeavor to throw enough light on the question to impress you with its importance and to leave with you the thought that anesthetics when administered properly and to the proper patients, should be utilized by our profession to a larger extent than they have been in the past, and with less fear of danger.

For this purpose it will first be necessary to review briefly certain portions of the physiologic action of such drugs as chloroform, ether, ethyl chlorid, nitrous oxid, as well as cocain and similar local anesthetics. The physiologic action of the recently introduced proprietary mixture, somnoform, is in some respects similar to these.

MODE OF ACTION OF ANESTHETICS.

Many theories have from time to time been proposed to explain the mode of action of anesthetics.

The principle theories extant are as follows, viz:—

1. Anesthetics act by retarding oxygenation, thus producing asphyxia.

2. They act by causing certain changes in the blood, which changes induce secondary inhibition of the functions of the sensory nerve cells.

3. They produce an anemia of the brain which results in loss of consciousness and the production of the anesthetic state.

4. They have a direct action upon the nerve centres, causing a depression of these centres and a loss of control over the functions of that portion of the body over which the affected centres preside.

The last of these theories is the one which is at present accepted, and our knowledge of the manner in which these centres are affected and their

order of affection constitutes the chief safeguard of the anesthetist against dangers. A knowledge of the location of these centres, and the functions which they control, together with a knowledge of the order in which they succumb is then, very important.

The centres presiding over consciousness are located in the cerebrum; those controlling reflex muscular activity are situated in the spinal cord; while those which predominate the functions of respiration and circulation are to be found in the medulla.

When chloroform, ether, nitrous oxid and most of the general anesthetics are administered, they depress the centres in the following order, viz:—

First, the centres in the brain presiding over consciousness.

Second, the centres in the cord presiding over reflex muscular activity.

Third, the centres in the medulla controlling the functions of respiration, and

Fourth, the vaso-motor and vagus centres in the medulla controlling the functions of the heart and circulatory apparatus. Owing to the fact that these centres are affected in this regular order, as mentioned above, and that the depression of each set of centres produces a regular train of symptoms, the anesthetist is enabled, by watching carefully the symptoms elicited as the anesthetic is administered, to carry his patient to a certain desirable stage and retain him in that condition a reasonable length of time.

STAGES OF ANESTHESIA.

Various authors make different divisions and give conflicting statements as to the stages into which the symptoms of anesthesia may be divided. I shall adopt one based on the point that I have endeavored to bring out in discussing the physiologic action of drugs on the centres, viz: that the centres are affected in regular order.

The *first stage* is known as the stage of *imperfect consciousness* and is evidenced by certain symptoms of partially controlled nerve function, such as laughing, crying, incoherent talking and holding of the breath. This stage evidenced by these symptoms, is an indication that the centres presiding over consciousness, located in the brain, are being depressed.

As soon as complete depression of these centres is accomplished and consciousness is entirely lost, the *second stage* is reached, which is exhibited by various manifestations of uncontrolled reflex activity, such as jactitation, rigidity and violent muscular movements, the patient often becoming very strenuous in his efforts. This stage is known as the *stage of excitement*.

The centres presiding over reflex activity located in the cord are next affected and finally completely abolished, which is evidenced by a gradual quieting of the patient, he being to all appearances in a calm sleep. This is the *stage of anesthesia* or the *surgical stage*. All of the functions of the

body are now abolished with the exception of those of respiration and circulation, and the patient is ready for the operation.

The centres of consciousness and the centres of reflex muscular activity being abolished, the only other centres unaffected are the centres of respiration and circulation. If the anesthetic is carried this far and no farther, the patient being kept at this stage, there is no danger from the anesthetic, provided it has been administered properly and a physical examination of the patient instituted beforehand has assured the anesthetist that the heart, lungs, brain, blood-vessels and kidneys are in a healthy condition.

If the anesthetic be carried beyond this point, the centres presiding over respiration, located in the medulla, will be the next to be affected, and lastly the vagus and vaso-motor centres, also located in the medulla, will be paralyzed: thus the functions of respiration and circulation will cease and death ensue.

A poisonous dose of cocain produces its untoward results by paralyzing the same centres and frequently in the same order as mentioned for the general anesthetics.

There is usually to be noted:—

First, depression of the cerebral centres, manifested by narcosis or convulsions.

Second, depression of the centres located in the medulla and spinal cord, with loss of reflex activity together with failure of respiration and depression of vaso-motor control.

Third, direct depression of the heart itself.

This is the usual order of affection, though occasionally there arises an irregularity of symptoms, due to a variation in the order of affection of the centres.

The principal dangers incident to the administration of anesthetics are as follows:—

1. Improper administration, arising from carelessness or ignorance of their physiologic action.
2. Diseases of the heart, lungs, blood-vessels, kidneys and brain, and
3. Secondary effects, due to poor elimination of the drug from the system.

CONTRA-INDICATIONS.

Diseases of the heart, lungs, blood-vessels, brain and kidneys produce untoward results, either on account of the irritating effects of the drug on these tissues or from additional strain placed on them incident to the elimination from the system. The principal diseases of the *heart* contra-indicating the use of anesthetics are advanced valvular diseases where compensation is absent, fibroid and fatty degeneration, fatty infiltration and dilation.

The diseases of the *blood-vessels* contra-indicating their use are arteriosclerosis or a hardening of the vessel wall, aneurism, and pressure produced by tumor.

The diseases of the *kidneys* concerned are albuminuria, glycosuria and the various forms of Bright's diseases.

Diseases of the *lungs* acting as contra-indications are acute respiratory troubles, such as acute bronchitis, and pneumonia; chronic conditions such as pulmonary tuberculosis in advanced stages; asthma, sometimes; or any other condition which will tend to weaken the lung structure to such an extent, that it cannot perform properly the functions of the respiration or resist the irritating effects of the vapor.

Degeneration, tumors and other pathologic conditions affecting the *brain* also contra-indicate the use of anesthetics.

Patients are occasionally known to die several hours or days after the administration of an anesthetic. This is known as *secondary effect* and is due to retention in the blood current of the drug administered and its interference with proper metabolism of the tissues, resulting in a poisoning of the system by the toxic products present. This is in nearly all cases due to diseased and weakened heart or eliminative organs, such as the kidneys.

In addition to the contra-indications already cited may be also mentioned hernia, enlarged tonsils and chronic alcoholism.

All of the contra-indications to the use of anesthetics impress upon us the importance of conducting a systematic examination of the patient before administering general anesthetics. Indeed these same diseased conditions of the organs mentioned also act as strong contra-indications against the careless use of *cocain and similar local anesthetics*. I am confident that fewer deaths would result from cocain poisoning if the dental and other specialists were more careful in this respect.

PHYSICAL DIAGNOSIS.

Let us turn briefly to the subject of physical diagnosis. A strict definition of the term would include a diagnosis of pathologic or disease processes, taking place in the body, by means of all the special senses. Practically, though, it is confined to the discovery of all information to be obtained by means of vision, touch and hearing.

A certain degree of familiarity with the ordinary symptoms of the various diseases of the heart, lungs, blood-vessels and kidneys is advisable, in order that the diagnostician may be helped in his diagnosis by physical means. Armed with a knowledge of the usual symptoms of these disease processes, he adopts the proceedings to be briefly mentioned as follows in a physical diagnosis examination.

The methods instituted are known as, (1), Inspection. (2), Mensuration. (3), Palpation. (4), Percussion. (5), Auscultation.

Inspection is the act of obtaining what information is possible by means of *vision*, noting the shape of the chest, the position of the shoulders, whether drooping or normal, and the general physical appearance of the patient.

Mensuration is the act of measuring various portions of the chest and other localities to determine variations from the normal on one side or both.

Palpation is the act of laying the palms of the hands or fingers on the chest wall and detecting certain normal vibrations or variations from the normal, when the person touched speaks or coughs. By palpation is also recognized the excursion of the breathing movement, (sometimes of value in detecting abnormal conditions): cardiac thrills, indicating diseases of the heart; and also the resistance due to increased density of an organ.

Percussion is the act of striking a part in order that certain characteristic sounds may be elicited, or that variations in those sounds due to disease of the organs percussed may be produced. Percussion is done either with the middle or index finger, or both, of one hand placed immediately on the part percussed, when it is known as *immediate percussion*, or with the fingers of the other hand interposed, when it is known as *mediate percussion*.

There are also small hard rubber or ivory instruments, little used, designed for the same purpose, known as a plexor (or hammer), and plex-meter.

Each portion of the body has a characteristic percussion sound in health, which varies in intensity, pitch, quality and duration. In disease these sounds are changed and the character of the new sound produced indicates to the trained ear the pathologic condition producing the sound.

Auscultation is the act of listening to sounds mechanically produced by the movements of the lungs, heart, and blood-vessels.

It is called *mediate* or *immediate*, depending on whether the ear be placed directly on the chest wall or whether the stethoscope be used. Characteristic sounds are produced by the lungs, valves of the heart and the blood-vessels, when these organs are in a state of health, and new or adventitious sounds are produced by disease of the same organs.

In addition to examining the heart, lungs and blood-vessels of a patient applying for an anesthetic, an examination of the urine is important in order that the state of the kidneys may be determined. All general anesthetics are eliminated largely by the kidneys as well as by the lungs and sweat glands, and if the kidneys are diseased, trouble is liable to occur from inflammation of these organs or improper elimination and interference with metabolism.

Time will not admit of a description of the methods used to determine disease of these organs.

In conclusion I desire to state that I have tried to impress upon my hearers three facts.

First, owing to increased knowledge gained in recent years of the physiologic action of general anesthetics, it is conceded that their proper administration is not as dangerous as formerly supposed.

Second, a knowledge of physical diagnosis methods is important to those who use *local* as well as *general* anesthetics.

Third, Dentistry owes it as a duty to herself for the reasons already mentioned in addition to others, to devote more attention to this subject.

If this paper accomplishes even a little good in this direction, your essayist has not written in vain.

ALVEOLITIS—THE DISEASE OF WHICH PYORRHEA ALVEOLARIS IS ONE STAGE

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(Continued from Page 128, February Summary.)

REGENERATION.

AT the present time, the greatest uncertainty about alveolitis is in regard to the origin of the cause or the kinds of infection producing it. The symptoms are nearly the same in all instances, and the treatment is practically the same in all cases, namely, the removal of deposits and of any necrosed or dying tissue, which constitute the hindrances in Nature's path to recovery.

The reactionary results of simple injury to the various tissues are throughout conservative and reparative, and are directed toward restoring the tissue to the original and normal conditions. But, in cases of surgical infection, the efforts at repair are apt to be more than overbalanced by the growth of bacteria, in which case the disease continues to spread, either rapidly or slowly, involving more and more tissue, until death ensues, unless the exciting cause can be disposed of by Nature herself, or is removed by the surgeon.

In many lower forms of life whole organs are replaced when lost. In vertebrate animals much tissue will be replaced if environment is favorable, and the best doctor is he who knows best how to remove hindrances. Bone is one of the slowest and hardest tissues to be rebuilt and depends for this purpose on the periosteum and endosteum, its formative tissues, so that in operating these membranes should be preserved as far as possible.

After curetting and burring have been done, the cavities should be washed out with a warm antiseptic solution to remove the cuttings. The blood should be allowed to clot in the cavity. My plan is to be careful not to disturb the blood clot so long as it remains aseptic. If there is a tendency for pus to form, the wound should be washed out every one, two or three days, according to conditions, and, if pus continues after ten days, a second, third or even more attempts must be made to remove the offending material.

Aseptic blood clot is Nature's "false work" or scaffolding on and into which she builds all new tissues, no matter of what kind. The less the healthy clot is disturbed, the more prompt is the repair. In the blood clot is formed the granulation tissue of repair, which is the second stage of the building of new tissues. Any disturbance to these granules is also a hindrance to repair: hence packing is seldom called for.

Following the formation of granulation tissue is its gradual change into tissue of the kind from which the granules sprang. This process continues until the wound is healed. The hindrances to this normal process are foreign bodies, dead or dying tissue, and the presence and increase of bacteria. Nevertheless there is a continuous and never-ceasing effort to extrude or to tear down and carry away any foreign body.

One of the most important offices of the leucocyte is to involve into its substance bacteria found in the blood and destroy them. A small particle, not soluble by osteoclasts or leucocytes, is floated in pus and carried to the surface. Dead bone, as attached or loose sequestra, is continuously worked at by the osteoclasts so long as life lasts, or until it is removed. One of Nature's methods of removing a sequestrum is by involving or enveloping it in granulation tissue, which finally develops into normal or scar tissue. Underneath this tissue absorption of the sequestrum continues until completed.

This new or granular tissue thus endeavoring to envelop the diseased or dead tissue is called the involucrem. Dead tissue thus completely involved is attacked from every point, and often an enemy thus attacked can be destroyed, whereas, if only partly surrounded, it would hold its ground.

This enveloping process is a foundation principle of organic nature, as is exemplified in the envelopment of its food by the amebas and the hydra, the envelopment of bacteria by the leucocytes, etc. A most familiar example of it is seen in trees, when a hole is chopped into the wood, or a limb is sawed off. At the end of the season, the involucrem can be seen growing up around and over the injured place, finally involving all the dead or injured tissue, ultimately absorbing it unless the injury is too extended, but the effort to dispose of the old material never ceases while the tree lives.

This process is one of the most common things to be seen in the human mouth, especially in patients who have been or are being treated for alveolitis. When the crown of a tooth has disappeared, the involucrem begins to grow over the edges of the root, and at times a portion of the root may be completely enveloped and finally become absorbed. Inflamed gums, from irritation of tartar or other causes, constitute an attempt to involve and destroy the enemy and replace lost tissue.

And now to the point of the above explanation. What really happens in a large number of cases treated for suppurating or necrotic alveolitis is that an effort is made by the doctor to remove the deposits. Some doctors may try to remove dead bone. In any event, the tissues are wounded in the effort, and all or most of the deposits and dead bone removed and the limiting zone or membrane at least partly broken up. Thus Nature is stimulated to a new and vigorous effort to repair the damage done. The involucrem grows up and around the root, enclosing more securely any deposit that may have been left. Of as much importance, however, is any necrosed or infected bone which the involucrem may enclose, for it is

likely to increase in extent and, as stated, many times involves the deeper portions of the maxilla, often reaching the antrum (Fig. 9).



Fig. 9.—Showing a typical case in which necrotic alveolitis has perforated the antrum above first molar. The wires show the opening into the antrum to be about the diameter of the crown of the tooth. Typical of thirteen cases.

If I have suggested anything new or valuable, I believe it is the necessity of either curetting or burring about all teeth where the disease is found, and of more thorough removal, if the disease is deep seated—that is, of consciously assisting Nature to do what she is always trying to do. These deeper-seated sequestra, however, do not always prevent the involucrem from closing tightly about the neck and roots of the teeth, especially if the involucrem is composed of bone tissue. In such a case, at some point about the tooth, dead bone may be found or a place which can be penetrated to dead bone or to a cavity above. This, however, can be done only with a delicate but sufficiently stiff probe such as I will show. A small portion of necrosed bone may be absorbed and complete regeneration finally take place after Nature has been stimulated to a new effort, but the approved surgical treatment is to remove all dead or dying bone if it be practicable.

It must be borne in mind that the process of regeneration of bone in these cases is accompanied by acute inflammation of the surrounding tissue. The new-forming bone is soft and yielding; the callus does not show much tendency to harden for three or four weeks, and does not become ossified for six or more weeks. Often, therefore, after the removal of bone about the roots, the teeth are looser than ever, and at times need splinting with wires to other and firmer teeth, the splint remaining until ossification is completed, when the teeth will become firm and useful, provided there remained in the beginning enough live bone, periosteum, and endosteum for the purposes of regeneration.

CONCLUSION.

In conclusion, I apologize for the length of this paper. To me, however, every portion of the subject is fraught with so much interest and clinical experience that it has been difficult to select that which seemed most necessary in presenting the subject.

The radiographs will somewhat support my practical experience, but only your own experience, past and future, can reveal to you the great prevalence and ravages of this disease.

DISCUSSION

Dr. J. D. Patterson, Kansas City, Missouri: I am always interested in this subject, call it what you please, pyorrhea alveolaris, Riggs' Disease, or any of the numerous names, I care not which. I use Pyorrhea more than any other, and I think it covers it about as well as anything else.

I have for over thirty-five years been treating the disease, with more or less success. During that time I have seen hundreds of cases; I have written a good deal about it; I have talked a good deal about it in college and dental associations, and some years ago—I have forgotten just how many—when we thought that the disease was the result of systemic conditions or constitutional origin, I thought we had come to the solution of the trouble. I had had great difficulty in controlling the disease. I gave a good deal of attention to the new fad, and read everything that came out on the subject. I thought the conditions arose from faulty metabolism and that this was the cause of the disease. I became convinced, however, that there was not very much to that. I speak of this to show that I have always been very much interested in finding the etiology or the cause of this disease. In 1885, when I read a paper before the American Dental Association upon the disease and its symptoms, I had a record of hundreds of cases, and it has not been my province to find that systemic conditions cut very much figure. For the last two years, beginning with 1907 and up to this time, I had ninety-five new cases, and the result of my investigations in these cases tallies with the investigations and records that I have kept for many years, and with the closest inspection and clinical experience, I could not find more than ten per cent. that had any sort of systemic trouble or had had in late years. As I found, there were no greater number of people coming to me for pyorrhea with systemic conditions than those who came for the usual dental operations. My pyorrhea patients are of strong constitution, with good vitality, and that has been my experience from the first with the great majority of people who came to me for the treatment of pyorrhea.

When we come in contact with the statement made in the very admirable paper of my friend Dr. Fletcher, that in one hundred and thirty-eight cases there were thirteen cases with perforation of the antrum, many showing osteomyelitis, and others showing tic douloureux, I cannot understand why these clinical observations are so greatly different from other clinical records.

I am interested, especially interested, and have been for considerable time, in preaching against the idea that we must cure systemic conditions before we can cure the disease we call Riggs' Disease.

Now, I am not saying that Dr. Fletcher in his paper today has gone along these lines, as many others have done, but I do say that the impression gained from listening to the paper discourages the dentist from taking hold of this disease, because, if he believes Dr. Fletcher, he knows that if it is a bone disease the systemic trouble must first be conquered.

I want to say that I care not what the systemic condition is, remove all of the local irritation which you find, and you will be rewarded with a cure. These cases of

Pyorrhea Alveolaris without local irritation in one form or the other, I have never been able to find. I have always been able to find some local irritation. It may come in various forms. I have not time to go into that tonight.

Now, I do not want you to think that I do not give proper place to constitutional troubles in the treatment of this disease; any disease of this kind with predisposition, must have attention. *That is surgical sense*, but to say that pyorrhea cannot be cured without systemic treatment is saying something which is not true, in my belief. There never was, in my opinion, a case of pyorrhea without the local irritation. So many of you put in beautiful fillings, inlays, crowns and bridges, and allow the tissues surrounding the teeth to be in a deplorable condition, and you are doing this because you have been taught that systemic troubles cause pyorrhea.

So far as constitutional treatment is concerned, it is my duty, and it is your duty to give them into the proper hands for treatment. It is the province of the Medical Adviser. Do not think it is yours. Your business it to remove all local irritation.

In reading this paper it seems to me that Dr. Fletcher has been somewhat inconsistent. Here is the first statement in the paper:

"In presenting this subject it is desired to view it from the standpoint of those who believe the affections of the alveolar process to be primarily a bone disease. The writer would class so called pyorrhea alveolaris with other well known infectious surgical diseases of bone, since its symptoms, progress, pathology and termination, as well as its systemic features, seem to be identical with diseases of bone in other parts of the body, and not primarily a disease of the periosteum, periodental membrane and gums, as regarded by many."

Well, I am one of the many. I believe that it is a disease of the periosteum, periodental membrane and gums, absolutely and totally. There never was pyorrhea without a solution of the continuity at the gingival border—a solution of the continuity at the gingival border about the neck of the tooth, else you have no pyorrhea,

After all Dr. Fletcher agrees, because he says later:

"Alveolitis in its progress includes all the processes known to other surgical diseases of bone, viz: acute, chronic, suppurative and necrotic stages. *The initial exciting cause, in the writer's opinion, is calcareous deposits about the necks of the teeth*, in nine-tenths of the cases at least. The tartar being hard and rough when it comes in contact with the gums, excites in this tissue an effort to remove the foreign body. The tartar being adherent cannot be removed in this way, and the inflammation becomes more extended and violent, resulting in raw tissue and open blood-vessels at the point of contact with the tartar; this usually ends in pyogenic infection and the formation of pus, in small quantities at first. The absorption by pus, or the floating of a foreign body in pus, until the surface is reached and an opening made for its discharge, is a familiar process of a thorn or a splinter in the flesh.

"Tartar against the gum margin is a foreign body, and nature endeavors to dispose of it just as she would the splinter. The tartar being fixed only continues the inflammation, and, as stated above, with pus as the result. The thin edges of the alveolar process being continually attacked by pus or osteoclasts, soon begin to melt away, and the membranes covering the bone and roots of the teeth become diseased or disappear with the bone. So long as the irritation remains, this process continues, its rapidity varying with the kind of infection, the environment, and the individual. Thus it is seen that nature in this particular malady, if unassisted, defeats her present object, for, in her attack on an enemy, the calcareous deposits, she destroys the tissues about the teeth until the tooth with its attached tartar is extruded, thus finally accomplishing what she started to do."

Now, this is not consistent with the first part of his paper, because he says in the first part of his paper that it is a bone disease and is not a disease of the periosteum, periodental membrane and gums, etc., and he gives the bone as the seat of the primary infection.

He gives the impression that it is primarily a bone disease, and then afterwards denies it. The impression that the paper leaves is that we can do nothing with pyorrhea without obliterating the systemic conditions and bone diseases, which, he says, are so common.

Dr. Fletcher gives considerable space to bolstering up the supposition that pyorrhea is of bacterial origin or infection. If the disease were of bacterial origin, or if bacterial infection has anything to do with inciting the disease, there must be a specific micro-organism. Of course, several kinds of bacteria may produce pus, and we find several kinds of bacteria in pyorrhea, just as we do in alveolar abscesses and other pathological conditions of the oral cavity.

The essayist speaks of so many antrum troubles. I have had the antrum involved in pyorrhea which destroyed the pulp in the teeth and alveolar abscess followed, causing destruction of the bone. In pyorrhea I never saw an infection of the antrum without pulp involvement. It does not come from the pyorrheal condition outside of that.

In regard to osteomyelitis being found in connection with pyorrhea, my opinion is that it will not occur, unless it is primary, and then you may have pyorrhea alveolaris and osteomyelitis and not otherwise.

"When the tooth is out, if the infection is not mixed with other germs, such as tubercular and syphilitic, healing becomes prompt and complete in the normal time for the building of bone structure, say in two or three months. Under proper surgical treatment, however, healing can be made just as prompt and complete, and the teeth retained and made useful, provided the dead and infected bone be removed before the foundations of the tooth are too greatly destroyed."

In any case of pyorrhea alveolaris, once the tooth is extracted, I have never seen the tissue that did not heal at once. This is not a scientific argument, but it is a practical one. When you take the teeth away, the tissue heals like magic. It would not do so if it were really bone trouble, would it?

"TUBERCULOSIS: In considering tubercular infection as a cause, the writer's experience would make him believe that alveolitis in all its stages, after its initial lesion, is more largely due to this infection than to any other.

"Descriptions of this disease in other bones, by two of our best authors and surgeons, will better serve than my own, as a description of alveolitis and its ravages. The action of tubercular bacilli on bone, as here described, is particularly applicable to carious alveolitis.

"Roswell Park says, (page 160, Vol. 1, under Tuberculosis): 'The most important and frequent of the infectious diseases common to animals and man is tuberculosis. * * * Tuberculosis as a form of disease is more prevalent than any other, and is the cause of death of a proportion variously estimated at from 20 to 30 per cent. of mankind. It is a disease which intimately concerns the surgeon, perhaps even more than the physician, inasmuch as it is also the most common of all the so called surgical diseases. The frequency with which it is met varies in different parts of the country, and in some measure with the character of the population. In the average surgical clinic of the United States, probably 25 per cent. of cases of surgical disease are manifestations of this disease.'

"The tuberculous process, however, may affect any of the bones of the body, and in some cases, notably in the ribs and in some of the flat bones, may affect bones at a long distance from any joint. In that case the pathologic changes are confined entirely to the bones or to adjacent soft tissues, and the symptoms are not complicated by the symptoms of infected joints. In such cases the clinical symptoms are quite different from those which are seen in tuberculous joints.

"Tuberculosis infection of the ribs or sternum also is common. In such cases, the first symptom is localized pain or tenderness, usually not severe. In the course of time the soft tissues surrounding such a bone become infected and become adherent to the bone, or a 'cold abscess' may form, which may perforate the skin through tuberculous sinuses. The diagnosis always in these cases, lies between tuberculosis, actinomycosis, syphilis and osteomyelitis, an exact determination of the origin of the cause oftentimes can be made only by inoculating animals with a discharge from the sinus, or by detection of pyogenic organisms or of the milliary tubercle, the histologic unit of tuberculosis, or by detecting the peculiar bodies seen in actinomycosis.

"The bending and distortion of the spine and other bones and joints affected with tubercular germs, has its counterpart in the slow separation, twisting and extrusion of the teeth."

Will we admit this? I do not think so. I can account for the twisting of the teeth very rationally. The investment of the tooth becomes disturbed and distorted, the tooth is loosened from its strong attachment and becomes rotated and is held in

that position until the bone heals around it, so I think this is drawing a long bow for the support of tubercular pyorrhea alveolaris.

TREATMENT: When he commences with the treatment, he does not say a word about treating the constitutional or systemic condition, or anything about the treatment of bone disease. It seems to me that he started out to consider it primarily a bone disease, and I should desire that he give us his treatment. If it is a bone disease per se, then we should give attention in the treatment to bone diseases.

There is another thing in the paper, and it is something that has not had enough prominence. Take away all necrotic bone. He may be entirely right in this.

I most emphatically teach against the injection of tissue. One reason is that the tissue heals very slowly after injection, and we want the tissue to heal up rapidly, because if it does not heal up rapidly there is always more of a chance for continued infection.

I am very glad, indeed, to have heard Dr. Fletcher's paper. There are many people working on the subject of pyorrhea, trying to find out more about it. I am not talking to discourage any man from working. We are all working and making investigations to the same end. There are men in Kansas City who believe that they have the solution of the treatment of pyorrhea by administering the vaccine treatment. But if you want to cure the disease, I think you will have to do what I am daily doing—remove all local irritation, keep perfect sanitation, and there is no trouble about the cure.

Dr. T. B. Hartzell, Minneapolis, Minn.: In rising to take part in the discussion of Dr. Fletcher's splendid paper, I desire to congratulate this association in that it has secured so able a contribution to the literature of this subject; in its conception and full fruition it evidences the work of a trained mind rich in experience.

I have both read and listened carefully to the paper and find much in it to commend, and with which I thoroughly agree. Nevertheless, I disagree with the essayist as to the perpetuating cause of Alveolitis, and also disagree with him as to the remedy proposed, even though he can and does show good results from the treatment advocated.

I will not now stop to analyze the paper, though I may take up some parts for analysis and discussion later. I am wondering whether your general impressions of the main ideas advanced by the essayist coincide with mine. To be frank, my first general impression regarding the paper, was that if the use of the bone bur is an absolute necessity to prevent the loss of the teeth that now are suffering alveolitis in the jaws of the American people today, then comparatively few will be benefited, and the general good sought will fail, because of the ominous sound of the plan on the ear of the patient.

My next thought was: Is the tubercle bacillus so great a factor in alveolitis as one naturally would infer from the essayist's experience? Again, can we not save teeth that are being lost by reason of wasting of the alveolar process without surgically destroying more alveolar process with the bone bur?

Is there not some factor somewhere along the lines in etiology, pathology, or treatment that has been overlooked or perhaps not given its proper value in the equation, that would, if known and given its proper value, make it possible for us all to save most of the teeth which I fear many dentists and their patients will continue to lose rather than submit to the somewhat *illogical process* of cutting away that which is needed to support the teeth? I know that tuberculosis is a scourge destroying the lives of more than one-seventh of our people, but I can adduce no proof that it is a direct etiological factor in alveolitis. I have examined carefully many specimens of pus from the mouths of pyorrhea patients, and can truthfully say I have never found tubercle bacilli except in the mouths of those suffering from pulmonary tuberculosis. I should be glad if the essayist would state just what percentage of his cases showed tubercle bacilli in the bacteriological examination, and whether these individuals gave evidence

of general tuberculosis or not. As a matter of fact in counting our cases for the past eighteen months I have treated personally, or had direct supervision of the treatment of three hundred-thirty cases, ranging all the way from acute osteomyelitis, where all the alveolar process was detached from one third molar to the other, to simple mild chronic pyorrhea, and have failed to attach any especial etiological importance to the tubercle bacillus, as regards alveolitis, and on the other hand have seen severe cases of pyorrhea in the mouths of tubercular patients yield to treatment readily. I will, in the future, promise to conduct my bacteriological examinations with a view of certainly settling this point, for it is one which demands the earnest attention of us all, and is new to me. Regarding the infection of the antra as a result of alveolitis, I am thoroughly in accord, having noted it in a considerable number of cases.

For years I have been an ardent admirer of and believer in the theories of Dr. Talbot regarding the possible constitutional origin of pyorrhea, basing my faith upon what I conceived its reasonableness, and the fact that it is possible to cause acute alveolitis by the administration of mercury which certainly seems evidence of the possibility of a local inflammation by a constitutional means.

I have, nevertheless, been compelled by constant study of many cases to believe that alveolitis is a local disturbance in the great percentage of cases. First, because after the analysis of a considerable number of urine specimens, I find the percentage urea and amorphous urates range about the same in health or disease, and also because if metabolism is but slightly disturbed, so that urea is retained, the individual dies of acute uraemia, and again because the late work along the lines of metabolism and bacteriology seems to eliminate metabolic disturbances entirely and point to bacteriology, to account for all rheumatic conditions, and lastly because the treatment we follow is almost universally successful, and is purely local. In fact, I believe that that local irritation arising from accumulations serumal and salivary calculus, and malocclusions are the principal sources of the initial inflammation which, in its initial stage, is purely traumatic. That the alveolar margin being of a transitory nature, and very delicate, readily yields to the traumatic inflammation, and it is destroyed, thus creating a lesion. The lesion once formed you have made possible the planting of an infection in a dead periodontal membrane, and now you have a permanent culture bed on an area of dead root surface to remain as a perpetuating factor.

Dr. Fletcher believes alveolitis is primarily a bone disease, and not primarily a disease of periosteum periodontal membrane and gums. He seeks to establish the foregoing premise as a fact by the results of his own experience and the observations of Miller, Magitot, Witzel and others, the cumulative result of whose experience in a general way point to the possible fact that the disease is bacterial in its origin, and has its seat in the bone primarily.

Dr. Fletcher states further. "It seems to be a law that certain micro-organisms finding lodgment in various bones of the body, produce certain phenomena or diseases. Therefore, it would seem a reasonable hypothesis to assume that these certain micro-organisms finding lodgment in the jaw bones or alveolar process, would produce the same results that they do in other bones. It would also seem rational to assume that these certain phenomena or diseases found in the jaws are produced by like causes, and are amenable to like treatment, and one object of this paper is to try to induce others to help to prove or disprove the reasonableness of this theory." Right here I clasp hands with the essayist, for we are working for the same end. But first let me say that the reasoning by analogy is helpful, and has led to the correct solution of many problems, its results are not to be trusted till tried out in the fiery furnace of the experience of many observers, therefore, I desire you not to assume the premise of the essayist to be correct until you have taken into consideration some additional evidence, backed up by cases and research work, and even then do not assume that this testimony is true until you have thoroughly tried it out. I wish to make the point right here that bone destruction or osteoclasia does not necessarily depend on

infection for its origin. I have here a slide showing osteoclasia going on in perfectly normal tissue showing a great profusion of osteoclasts at work. This specimen is one given out to our classes this year. No, osteoclasia ahead of erupting teeth, and in the resorption of the roots of deciduous teeth is a normal physiological process, and the first step in the destruction of the alveolar process is always the result of osteoclasia induced by traumatic influences, namely, irritating matters about the neck of the tooth or malocclusion. You certainly do not suppose the orthodontist depends on infection to produce the osteoclasia which he desires and needs to enable him to successfully move the roots of teeth in the alveolar process. You can successfully cause the destruction of the alveolar margins by tying a silk ligature about the neck of a healthy tooth, no matter how free the neighborhood be from infection, and on the contrary, I have tried to cause alveolitis and pyorrhea by placing pus from vigorous pyorrheal inflammations in the healthy gum tissues. I have tried this repeatedly and failed to induce the loss of bone thereby; NOTE, that in this experiment I have tried to choose perfectly healthy hard gums. The fact is, perfectly healthy gums are remarkably resistant to infections, and protect the underlying bone. I find it necessary to induce successfully a pyorrheal infection that the tissues must present a condition of chronic inflammation. You must have a lesion in which to plant, for healthy tissues invariably overcome the infection if you do not have a lesion. Let there be a lesion, however, and the planting is successful. No lesion can exist at the alveolar margins without the loss of those margins, and right here I wish I could show you a normal root surface as it appears under the microscope, because it is the root surface that from the time the slightest loss in bone structure occurs, receives and maintains the principal infection which perpetuates the inflammation, which from that time onward continues the destruction of the process. I believe this proven beyond any shadow of doubt. A close study of the root surface emphasizes the fact that it is a most perfect culture bed for the propagation of bacteria, for it is pitted by thousands of small openings, the stump holes of the dead periodontal fibers which are always more or less putrescent. Such root surface resembles empty honey comb. This pitted root surface cannot be rendered aseptic for any length of time even by the most thorough cleansing, the fluids of the mouth penetrate it, and gum tissue covers it, protecting a honey-combed surface filled with oral fluid, and inflammatory exudates where bacteria may grow undisturbed, chiefly staphylococci, though the results of all my examinations show always mixed infection. You naturally ask, What further evidence can you adduce to prove the foregoing statements? I reply, Examine, if you choose, a few slides which I will place under the microscope for you, one showing osteoclasia going on in a normal way; second, examine a few root surface preparations under the microscope; third, examine the planings of root surfaces from a great many cases, and note that all such planings show bacteria; fourth, with properly constructed planes remove all evidences of fiber origin on the root surfaces of, say, one-half of the teeth in a mouth, one where the pus is freely oozing from all the gums. If you do your work well, as you should, the section so treated will cease to ooze pus from the moment you complete your operations. The gums will grow harder and thin down, and you will be unable to cause anything to flow from the pockets while the balance of the mouth will grow progressively worse. This is an experiment I have tried repeatedly, and there are men in this room who have seen at least one such case last year at the National, which one year after treatment showed a contrast even more vivid between the two sides of the mouth than my word picture can express. Why do not these deep pockets re-infect? I answer, Because the porous root surface was skillfully cut away thus leaving a smooth dense surface incapable of holding infection, and a word of caution just here to those who wish to prove these statements regarding this root surface surgery, for it is a most delicate form of surgery, and is vastly different from cleansing the teeth.

First, do not remove more than just enough root tissue to obliterate all evidence of periodontal fiber origin, for the reason that immediately underlying this honey-combed

layer is a dense layer of cementum containing comparatively few openings which, if the planes are skillfully used, can be left almost as smooth as enamel. This hard layer covers the atypical bone of the cementum proper, which is full of lacunae and communicating canaliculi, and if this hard layer be cut through, you open it to infection, thus defeating the very object for which you are striving. Though, in any event, the resultant re-infection will never be as disastrous as the original root surface infection. I have seen scores of pockets fill with granulations where the bone between two roots had been lost to half the depth of the sockets, and become covered with healthy mucous membrane, and do all this within thirty-six hours after the operation. During this past year I have given instruction to seventy individuals, and watched their work, and can show any doubting Thomas who cares to take the trouble to look into the clinic of the college of dentistry of the U. of M., cases enough to convert the most skeptical. And if uniformly good results can be shown by students, what might not the rank and file of the profession do if they would only take hold of the work?

The time and labor spent in working out the histology of the root surface has been a pleasure, for it has led to the appreciation of the one missing link in the pathological chain necessary to the greatest success. And for me reduces the necessity for the bone bur to those cases where comparatively large areas of bone are dead, or the amputation of detached roots, and the drainage of abscesses, thereby greatly minimizing the shock of operation to the patient.

Regarding the operative procedure, one needs instruments of the plane type, having the bit or cutting edge exactly in line with the center of the handle, no matter how crooked the instrument be for reaching into inaccessible places. Next, is the need for the concave and convex plane heads, enabling one to plane both concave and convex surfaces.

The root plane we owe to Dr. Geo. Howe Winkler, who was granted a patent on his instrument in 1897, and the idea of placing the cutting bit in line with the center of the long axis of the handle we owe to Dr. C. W. Jones, of St. Paul, who directed the attention of the profession to this necessity in a circular to the profession printed in 1900, and the concave and convex plane heads we owe to Cassius M. Carr, who combined the foregoing principles in an application for a patent which was finally rejected by the patent commissioner May 19th, 1906.

It is absolutely essential that any form of plane you choose to use be exquisitely sharp, and it is equally essential that every particle of dead root surface be removed to gain success.

The after treatment must never be neglected, and consists in keeping the necks of the teeth scrupulously clean, correcting all malocclusions and splinting all teeth that have lost more than half their original depth of socket, and last, but not least, vigorous massage of the gums with a stimulating astringent, which helps to keep the gums tense and hard, for it is a fact that a hard, tense gum never overlies dissolving bone. Again expressing my great satisfaction in Dr. Fletcher's paper, and hoping to meet and know you all better in the future, I close my remarks.

(To be Continued.)

THERE is no drug which can compete with cheerfulness. A jolly, whole-hearted, sunny doctor is worth more than all the remedies in an apothecary shop. A writer known for his cheerful sayings received a letter from a lady stating that one of his humorous poems had saved her life.

—Success

AMERICAN SOCIETY OF ORTHODONTISTS

A SYNOPTICAL REPORT

THE eighth annual meeting of this society was held in Washington, D. C., on November 5-6-7, 1908. The attendance was the largest of any meeting yet held. The papers were filled with valuable thoughts and show the great earnestness that enters into the work of the society.

For the benefit of our readers we will present a brief synopsis of the papers presented.

THE PREMAXILLA -ITS INFLUENCE ON THE SEPTUM AND ON THE PALATE

By Harris Payton Mosher, M. D., Boston, Mass.

The author took up the subject in two divisions:

First, the comparative anatomy of the premaxillae, and the influence which non-shrinkage and failure of readjustment of the premaxillae exert upon the form of the hard palate.

The second portion of the paper dealt with the influence of the premaxillae upon the nasal septum.

The author said: For me it is settled that the incisor teeth can deform the septum. Whenever the incisor teeth are well spaced and have erupted normally and the halves of the palate are of equal height, the septum is most always straight.

Bringing about the normal eruption and spacing of the incisor teeth by appropriate treatment, the orthodontist can save many a septum from deformity. Not only should normal eruption, spacing and occlusion of the incisors be sought, but the other teeth should be made normal in these three respects.

This is important because the second great cause of deviation of the septum is inequality between the two sides of the palate, and this is due in nearly fifty per cent of the cases, to the teeth.

When it is not due to the teeth, it is caused by assymetry between the two halves of the head as a whole.

Two of the three chief causes of deviation of the septum, therefore, can be prevented by dealing with the teeth.

I think that the correction is due more to the widening of the nasal fossae and to consequent relief of obstruction, than to actual correction of the deviation.

The premaxillae exert a marked influence upon the form of the hard palate. In order to have a normally formed palate two changes must take place in the premaxillae; they must shrink in size to the proper degree, and they must turn downward sufficiently. Failure of both changes to occur results in the negro type of palate. A proper readjustment of position but a failure of shrinkage, results in a high arch. The premaxillae

exert an influence not only upon the form of the hard palate, but also upon the line of the septum. "I have been working upon the influence of the teeth upon the septum for the last year and a half," says the author, "and have seen over a hundred cases where the relationship between the teeth and irregularities of the form of the septum was demonstrable."

The best explanation for the slight anterior deviations which are so constantly found, is some fault in the eruption of the incisor teeth. Abundant dissecting room findings prove that deviations so started may extend far backward on the septum and become obstructive.

BASE METAL VS. NOBLE METAL APPLIANCES IN ORTHODONTIA

By Clarence Jones Grieves, D. D. S., Baltimore, Md.

The essayist stated that the object of the investigations reported in the paper was to obtain, if possible, ideal materials which, exposed in the human mouth, will accomplish quickly, definitely, and finally, the movement and retention of teeth, and at the same time do no damage to the denture, associated parts, and the general good health, and still be not offensive in character.

He thought that all would agree that these ideals were next to impossible, such are the various and often times directly opposing physical forces required in one small apparatus exposed in a persistently trying environment. He thought all the metals now generally used were glaringly defective. Of primal importance is the damage existing in corrosion or disintegration of both apparatus and teeth, which in this instance could be produced only by acids acting at minute distances, such are the dilutions of the human mouth, and resulting from an acid producing environment.

In his experiments the author had tabulated results of the microscopic inspection of various sorts of apparatus that had been worn in the mouth. From these investigations he was convinced that platinous gold and the higher karat golds having but little zinc, all did greater damage to the adjacent tooth structure than appliances made from German silver. Decalcified lines and spots were common, well marked and white, without salt staining.

The rapid decalcification occurring chemically under noble metal appliances, compared with German silver, is highly significant.

We have something in German silver bands that either delays formation of acid, or breaks it up after being formed.

Gold plated German silver appliances disintegrate more rapidly than the polished plain German silver.

The rapid degeneration and breakage of wire ligatures crossing platinum-gold, or gold plated German silver arches, as compared with the more lasting wear over plain German silver arches, is due to electrolytic action.

The toxicology of German silver cannot be elaborated sufficiently to be convincing.

If the use of noble metal appliances becomes general, the orthodontist will be compelled to see his patients more frequently than heretofore, and completely remove all arches and retainer bars, and give careful prophylactic treatment at least once a week. For while the cement will protect the teeth about and under the bands, the tooth contact points along the line of the arch and ligatures will do greater harm to the enamel than German silver if not so disturbed.

SOME SUGGESTIONS ON THE MANAGEMENT OF CASES OF MAL-OCCLUSION ASSOCIATED WITH MOUTH BREATHING

By M. T. Watson, D. D. S., Detroit, Mich.

Doctor Watson's paper considered mainly those cases known as Class 2, Division 1, as well as cases of Class 1 where the anterior teeth occupy a position quite similar to that found in Class 2, Division 1. He had noted that the patient became a mouth-breather again as soon as the retaining appliances were adjusted. Two chief factors in this continued mouth-breathing are "habit" and "lack of nasal capacity." "If these conditions are not corrected during the orthodontic treatment, the result will be a permanently lessened breathing capacity, and, of course, an unsatisfactory occlusion of the teeth." His treatment and retention was planned with two purposes in mind: first, to overcome the "habit" of mouth breathing so far as it may be a factor, and secondly to bring about a development of the nasal capacity by compelling the nose to perform its normal function during the correction of malocclusion and the long period of retention which follows. Dr. Watson believed the combined efforts of the rhinologist and orthodontist were required in order that even moderate success can be attained in dealing with patients whose internal face is underdeveloped to the extent of materially lessening the nasal spaces as well as producing marked malocclusion of the teeth.

Treatment was to be proceeded with in the usual manner, using the arches and intermaxillary elastics. The patient soon becomes able to breathe entirely through the nose during such treatment, and this restored function will aid in developing that organ. The widening of the dental arch, and the mesio-distal shifting of occlusion *is to be carried on very slowly*, thus keeping up a mild form of stimulation of the parts for a long period, thus assisting development, etc. This latter point was strongly emphasized.

The point was also emphasized that in many of these cases there is a degree of infra-occlusion of the molars and bicuspid, and also the incisors. By changing the mesio-distal relations slowly the tendency of the anchor teeth, that have been elongated during treatment, to return to original occlusal level is not so marked, and when the retention is had by means of elastics, instead of spur and plane, the anchor teeth will not settle down into their sockets, but the bicuspid will erupt, unaided, to a proper level.

Considerable time was given to a description of retaining appliances adapted for the use of the intermaxillary elastics.

A CONSIDERATION OF INFRA-OCCLUSION

By A. P. Rogers, D. D. S., Boston, Mass.

The essayist dealt with that type of malocclusion known as the "open bite." The condition may be found only in the anterior of the mouth, or may involve the bicuspid and molars of either the upper or lower arches, —or both. There are few problems of greater seriousness to the orthodontist than the treatment and retention of infra-occlusion alone, or when accompanied with other mal-developments of the dental arches. Most serious when in combination with "supra-occlusion."

Dr. Rogers presented illustrations on the screen, showing various modifications of the condition, attributing as the causative factors, in many instances, the habits of thumb sucking, tongue sucking, etc., as well as lack of development of the maxillae, unaccompanied by any such habits. In one case, supra-occlusion of the molars complicated the infra-occlusion of the incisors.

The essayist noted that in Class 2, Division 2, where the incisors were so commonly supposed to be in *supra* occlusion and should be depressed, that the teeth had in reality only reached their proper positions, and the infra-occlusion of the molars (usually the lower ones) the incisors were allowed to glide past each other. The application of a retaining appliance in these cases, providing a plane lingual to the upper incisor teeth, on which the lower incisors might find a resting place, was advocated. Unnecessary to use intermaxillary elastics usually.

In those cases where we have infra-occlusion of the anterior teeth, particularly the upper ones, it is a more serious matter. A very light expansion arch was suggested, say of 18 gauge. Spurs can be soldered to the under surface of the lower, and upper surface of upper arch, for use of intermaxillary elastics, etc. Caution must be had if we use the up and down elastics (which are not always necessary) to have stationary anchorage of the lower arch, unless it is desirable to change position of these teeth also. Harmony in shape and size of the arches must first be established to secure the best results of treatment of infra-occlusion.

As retention he suggested the use of molar bands, with lingual wire to cuspid bands: labial wire from cuspid to cuspid, bending it into firm contact with central incisors (upper teeth) at juncture of enamel and cementum. Two spurs on a lingual wire between the same cuspid bands, are at the same time burnished against a similar point at the lingual surface of the centrals. Other methods were also alluded to, such as the banding of the central incisors, with lugs engaging the laterals at the same points as suggested with reference to the centrals. Usually best to band all six of the lower teeth, and use spurs over the lingual arch.

EVIDENCE AND SIGNIFICANCE OF TOOTH ERUPTION

By Varney E. Barnes, D. D. S., Cleveland, Ohio

This paper was a study of the evidence as shown in tooth forms, diseased conditions, deformities and normal conditions associated with the eruption of temporary and permanent teeth. Attention was called to

the forms of the teeth being designed to erupt without contact and liable to rotate when erupting under wedging. Deformities of the temporary teeth were shown to be followed by characteristic formations in the permanent set. A normal case was shown by casts taken at five and nine years and the growth spaces distal to temp. laterals and cuspids were constant during those years while the permanent centrals had come in and a lateral development had taken place to permit the centrals to erupt without contact. This showed the development complete at from seven to eight so that there was enough development anterior to molars to permit all permanent teeth to erupt without lateral stress.

From the evidence collected a number of working theories were advanced as seemed plausible and to give a base for future study. The theories were:

1. Theory of Width Development.

The width developments of maxilla and mandible are complete as far distal as the first permanent molars at from seven to eight years in the normal child.

2. Theory of Developmental or Growth Spaces.

A. The temporary laterals and cuspids plus their distal growth spaces exceed in width the succeeding permanent laterals and cuspids in the normal child of from four to five years of age.

B. The temporary centrals plus their growth spaces exceed the width of the permanent centrals in the normal child of seven to eight years.

3. Theory of Antero-posterior Development.

That portion of the antero-posterior development of the jaws between the region of the lateral and the distal of the second temporary molar is complete in the normal child of four to five years of age.

4. Eruption without Lateral Contact Theory.

Temporary and permanent teeth normally erupt without lateral or any contact with other teeth until in occlusion.

The other paper "A consideration of the Temporo-mandibular Region," by Dr. S. Merrell Weeks, Philadelphia, containing results of research work, was of such a character that we could not, in a brief synopsis, give the reader an adequate idea of its teachings. It was well illustrated with lantern slides, showing the path of the condyles in human and comparative anatomy.

The next annual meeting of this society will be held in Cleveland, Ohio, in October, 1909.

ALL of our joys and all of our troubles
come to us as the reflections or the
shadows of our own thoughts.

EXCHANGE OF PRACTICAL IDEAS

A NEW PRINCIPLE IN DIFFICULT BRIDGEWORK

By Francis H. Vallender, Berlin, N. H.

This is one of the methods I have found to overcome unparallel abutments for bridge work, making a sanitary bridge, and at the same time not destroying the teeth in order to gain parallel walls.



Fig. 1



Fig. 2

(Figure 1) shows bridge going into position A, hinge.

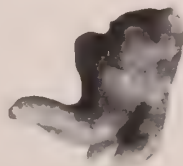
(Figure 2) shows bridge in position.

The bridge is made sanitary, hinge is hermetically sealed by placing a layer of fiber gold in the hinge just before the bridge is set, afterward burnishing the same.

DIFFICULT EXTRACTION OF AN ANOMALOUS TOOTH

By G. O. Davis, D. D. S., Marble Falls, Texas

The accompanying picture represents a lower third molar tooth, the right angle root extended back towards the condyle. The tooth has three roots, as you see, something unusual for a lower tooth, and the shape of



the roots made it hard to remove without breaking the fangs, or at least one of them. I have extracted teeth for at least twenty-five years and never saw anything like this one. I doubt whether any of my brother dentists have, either, of a lower tooth. It was abscessed on the right angle

root as shown by sac that came out with the fang. The sac covered the whole of the back part of the lower jaw extending nearly to the condyle. The ear was closed, so that hearing was impossible. Tartar had caused the gums to recede to near the apex of the roots. I made three unsuccessful attempts to extract the tooth, but when I gave it a backward and upward motion, it came out easily. You see that the roots are turned that way.

TWO PRACTICAL POINTS

By R. M.

First, I will describe a *short method of repairing vulcanite plates*. After cutting away adjacent rubber to get a fresh surface, cold pack with vulcanizable gutta percha, using a warm spatula and gasoline to smooth the outer surface. This will do away with the necessity of investing in two halves and separating the flask. The expansion of the material in this process of vulcanizing makes a strong attachment. *A free use of camphorphenique* will relieve the pain subsequent to the setting of a shell or post crown. It will also furnish relief from the painful eruption of a third molar.

TO PREVENT RUBBER WARPING ON ALUMINUM PLATES

R. C. Brophy, Chicago

When the base plate is made and spurred, if, instead of using the ordinary vulcanite and placing it in contact with the metal, you will put on a thickness of what we call weighted rubber, you will find it will persist in hugging and will not warp away, as the pure or straight vulcanite does. - *Dental Era*.

SO many gods, so many creeds,
So many paths that wind and wind;
When just the art of being kind
Is all the sad world needs.

Ella Wheeler Wilcox

MISCELLANY

DENTISTRY IN 1958—A GLIMPSE INTO THE FUTURE

By F. B. Spooner, D. D. S., Brooklyn, New York

(Continued from Page 147, February Summary.)

SYNOPSIS: A New York dentist, while hunting in the Rocky mountains, is buried by an earthquake. He wakes in 1958, is rescued by a flying ship, and carried to Denver. While in the insane asylum his pretty nurse tells him of the marvels that have happened in the past fifty years. He proves that his story is true, and is visited by some professional brothers. One of them—Dr. Handsome—tells him that it is *easy* to collect debts in the new regime, upon hearing which he faints. His nurse takes him to the open air, where he sees night falling on the city, and learns, while sitting in the gloaming, that he once made love to her great-great grandmother 90 years before.

THE next morning Agnes did not visit me, a strange young woman bringing an invitation from Dr. Handsome to visit the college at Colorado Springs, where he was to lecture.

We took a mono-rail train, which in an incredibly short time accomplished the journey, the length of which I could not estimate, such was the rapidity of our flight.

"You will be surprised," he said, "at the way in which our lectures are conducted."

We first entered a large room, the walls of which were lined with cases holding various machines for use in demonstrating, the like of which I had never seen before. Going up some winding stairs, we emerged on a platform in the center of the lecture hall. The lesson was on anatomy. At certain stages the room darkened, the organs being projected on a mammoth screen.

These were not the old illustrations taken from Gray's work, but life-movement. In the short hour I spent, more was conveyed to me than in a year, as things seen are more powerful than when heard. I contemplated the jaw, in all stages of movement: the muscles acting with no fleshy covering. The veins and arteries were seen, clearly displaying the circulation at a glance. Dissections appeared: the organs colossal cut with a knife the size of a farmer's scythe, moved with a giant's hand.

At the end of his lecture Dr. Handsome said, "Now, gentlemen, I will introduce to you Dr. ———, whom you have all heard about."

There was cordial applause: not the crude hand-clapping and stamping of feet, but a high musical note, the intensity of which betokened the feelings of the audience. Dr. Handsome took my arm, leading me to the front, while I was so taken by surprise that I could hardly rally my faculties to speak as follows:

"Gentlemen," I stammered, "I am unworthy to speak to you, as I know less than the most ignorant student in your ranks. The only merit I possess is age, a poor one indeed, as the sole excuse for years, and decrepitude, is wisdom.

I am astounded at what I see. So far have you reached out, putting old-time methods to shame, that I can tell you nothing; merely speak of the dusty past.

In my time we looked backward at the foot engine, thinking we were great with our electric motors. We filled teeth after first wrenching out the fibres, making abscesses that we knew little how to cure. When I last recall, we were waking to what was called mummifying paste, though many there were who called it the "lazy man's method."

Today it would be hard to find one of those broaches. You do not thrust into the Holy of Holies, a root canal, pushing in more poison than you get out, and which Nature would expel if not choked. You sterilize the canal, allowing her to take care of that point where the dead and living meet.

You have learned truth through your ancestors' painful striving in error. You have gold on every side, which ancient man sighed, lied and died to gain. But better than this, today a graduate receives a diploma with which he can practice all over the land, and not be held up in fifty States, in the name of the public, to find if he can fill a tooth.

It means your life, if you want to leave a State that is death, to go where the air gives health. You have no local State boards to gauge if your merit be equal to their own. For it is a law of nature, that no man wants to divide with his brother, and folly to make such a judge when gain is influencing his heart.

Women have escaped from the tyranny of the Jade fashion. They do not drag skirts in the streets, carrying home disease and death. I learn that no woman is allowed to marry until she have a certificate to show her acquaintance with certain physiological matters. All of you have your six year molars, and never experienced the shock when they were dragged from your jaws, for the reason that mothers had children automatically, and no sense to care for them intelligently.

Your grandmothers did not know if the liver was on the right side or the left. They were sent to school; taught the length of rivers, the height of mountains, with much that they never remembered, and would have done them no good if they had. At the higher school the girls studied of polite literature—poetry—old paintings—and to speak bad French. When graduated they could not write a legible letter and few could put down a column of figures under each other. They had small conception of the laws of health. They cared for the front teeth, as they were obvious, allowing the grinders to rot, as there was no instruction concerning such being the workers, meaning good digestion and long life. We were a little ahead of the times fifty years back of us, when a girl was sent to a Convent, learned her catechism, to embroider, and play the spinnet.

Small wonder, when Professors taught with teeth swaying to and fro. I recall my Parson—a grand man, afflicted with pyorrhea, was three years coming to visit me, and never materialized. He preached of a clean life here below and a glorious future to the dying, but failed to contemplate what was expiring in his own mouth, and the resurrection that would never happen there. He preached of moral responsibilities, and did not realize that he scattered physical neglect at every exhalation. He had *no time*, and went to Europe. On that holiday he acquired health and new matter with which to delight his flock, but I fear as he picked up knowledge he picked *out* teeth.

So, in our time the most learned did not know as much as the children of today. Rejoice, all you—would-be odontists—that “the cup” has passed from you—and you have not to argue with mothers that the six-year molars are NOT baby teeth “because they were never there *before*.”

When the kind applause had ended—due more to the matter than the manner—I was shown over the college. There was less labor to force a student on theory, but every effort to give practical clinical instruction. Lectures were going on all the time, with work in the laboratories and operating rooms; it being held that the real student could get his theory from books. He attended lectures if he saw fit, but could give four-fifths of his time to practice and one-fifth to the literature of the profession. As in the army, it is well to teach a soldier to mend his clothes and keep his boots polished, but the main desideratum is that he learn to shoot straight, not the way his uniform is knit, or the chemical formula of blacking.

This teaching reminded me of my term at college, where one year was spent in learning how to scale teeth. My Preceptor in this operation informed me (in later years) that he was hard put to it when appointed, saying to the Professor:

“What am I to teach the students? I can tell them all about scaling teeth in one lesson.”

“Sir,” said the old hand, “I could spend a whole morning telling them how to whittle a stick. Lecture on why orange wood is better to carry the pumice than lemon wood. Spend a week on the constituents of salivary calculi; how it differs in men and monkeys. Tell how a cuspid is called the canine, as it does not resemble a dog. I have some sharks’ jaws in the cabinet; you can take a month contrasting them with human teeth, animal teeth, and why hens don’t have teeth. Pumice will take two months; how it grows, where it comes from, what mountain throws out the best product. Why, man, you have a year’s material in hand!”

In 1958 they taught students what dangers to avoid after leaving college, wisely realizing that there was more in dentistry than knowledge of teeth. I listened to a discourse that showed human nature had not died since I expired. The words I caught were:

“Beware how you do dental work for relations, on entering practice;

for the outcome is apt to be unfortunate. Relations generally come to you for low figures. Should you give the best of service, they look with doubt, and if you have failures, there is trouble in the family. Decline at the start, and if they insist, ask full rates or work free; in the one case you get well paid, and in the other case, will make no enemies.

Your valuable remuneration will come from strangers; meaning by this not intimate friends, lodges, or your church members. Decline to pay a commission for patients brought. View with suspicion all who come with a tale about the other dentist, and cloak him—for you will need charity in the end from such people.

Take heed how you conserve pulps; for if you save a dozen, you get no praise, and if you have an abscess, you are a lost man."

"Words of wisdom," I remarked to Dr. Handsome: "I would that it had been engraved on my diploma."

In the department of bacteriology I learned that the habit of kissing was unlawful. Children were taught the dangers of the practice, and that the hither and thither extremity of the digestive tract were not fit for promiscuous osculation.

During this lecture I was treated to a grand sight. On the screen was seen that mysterious movement—the cell proliferation. In my age, there was membrane, cell wall, nucleus, and nucleolus; the instrument would reveal no more. The improved microscope had taken another dip into the minute. As with the telescope, the greater the scope the more stars appear, so groping the other way, another stage was reached; the nucleolus held the *nuclearius*. How much further in the ages, who can tell? For the end is God, and no man has seen Him.

(*To be Continued.*)

DEFEAT may serve as well as victory
 To shake the soul and let the glory out.
 When the great oak is straining in the wind,
 The boughs drink in new beauty, and the trunk
 Sends down a deeper root on the windward side.
 Only the soul that knows the mighty grief
 Can know the mighty rapture.
 Sorrows come
 To stretch out spaces in the heart for joy.
 —Edwin Markham

EDITORIAL

NEWSPAPER WISE AND OTHERWISE

DURING the recent meeting of The Institute of Dental Pedagogies in Saint Louis, there appeared in some of the daily papers of that city notices as follows: "Institute of Dental Pedagogies, meaning Society of Tooth Carpenters"; "Tooth Pullers in Session"; "Convention of Teeth Pullers ends with Entertainment," and similar headlines.

The impression given the public of the quality of such representative dentists as were there assembled, and of dentistry in general, was erroneous and unjust.

Perhaps the reporter or headline writer tried to be facetious, but what a stale bit of humor.

We cannot believe that it was really meant; that any editor of our live, up-to-date newspapers could possibly be twenty-five or fifty years behind the times and think that the chief occupation of the dentist of today is to "pull teeth." We believe, rather, that it was a thoughtless expression with no intention of harm.

A year or so ago, during the meeting of The Ohio State Dental Society, some of the daily papers contained similar headlines, and when the editors were approached regarding the undignified and slurring lines, they stated that no injustice had been intended and that really they had never thought of the matter in its true light. They assured the dentists that thereafter their notices should be prepared in a manner that would not injure the dignity of the profession, and the press reports of the last meeting of this society were above criticism.

These objectionable headlines are in evidence in almost every place where a dental meeting is being held, and is it not time that dentists take the matter up and educate the press? If some member of the local committee would in person speak to the editors of the various newspapers, prior to the time of the meeting, in regard to the injustice of such slurring notices, there is little doubt but that they would soon be a thing of the past. But if they are allowed to pass unnoticed, they, like the poor, "will be with you alway."

MEN YOU KNOW THE LOCAL COMMITTEEMAN

DOES that fellow own this convention?" someone remarks, as the local committeeman brushes past. "See him go! *Tempus* may *fugit*, but it couldn't catch this fellow in a whole day. He's busier than a bee in a boy's pants, and that is some, as you find out if you happen to be the boy.

"Doctor Blank is wanted in the clinic room!" somebody shouts. There is a swish! a whirl! and the slam of a door, and Dr. Blank is there. You could scarcely follow him with your eyes, so swiftly he went. He does not walk, nor run—he glides.

He has scarcely entered the clinic room when someone cries:

"Dr. Blank is wanted at the office!"

A bang! swish! whirl! and he is gone again.

He can't wait for the elevator, but plunges down the stairs, two steps at a time.

No sooner has he landed in the office than someone cries:

"Dr. Blank is wanted in the exhibitor's room!" And they are not to be disappointed, for soon he is there.

Dr. Blank is in great demand and is expected to furnish, on request, anything from a blue ribbon to a cork-screw (for definition see any classical dictionary), or from a prayer to a Turkish cigarette—(and if that doesn't cover the whole category from Alfalfa to Omega oil, my senses have deceived me).

But there is one thing that he is never allowed to get, and that is —a rest. He is indeed fortunate if he succeeds in finding time to eat, let alone Fletcherize his food during the days of the convention. He is expected to be everywhere at the same time. Even as a hen covereth her chicklets, so must he spread himself over three days and a restless multitude.

If he is tardy in responding when wanted, they call him lazy; and if he hurries, they accuse him of being so awfully important. If he has a ready answer, they say he thinks himself so smart; and if he doesn't know, they call him an ignoramus.

He bobs about like a jumping-jack, but it isn't for show; it's to serve others.

Their wants must be attended, and he has been delegated to attend them.

He does not stop to listen to passing remarks, here and there, but plunges ahead in his eagerness to see that nothing is wanting that he can supply.

He sees but one object, and that is Duty.

Finally the convention ends.

Everybody declares that it has been a grand success; everything moved like clock-work.

They extol the essayists, and president, and clinics, and exhibits, and rejoice that they came to the meeting.

The local committeeman, whose efforts contributed in no small measure toward the success of the meeting, has passed from sight and is forgotten.

But buried deep in his heart is a cherished thought, more satisfying to his conscience than mere words of praise, and that is of duty so well performed that it proved beneficial to his fellow men.

NEW PUBLICATIONS

Practical Dentistry by Practical Dentists. Compiled and edited by I. Norman Broomell, D.D.S., Dean of the Dental Department of the Medico-Chirurgical College, Philadelphia; associate editor of The Dental Brief; author of "Anatomy and Histology of the Mouth and Teeth," etc. Philadelphia: The L. D. Caulk Co., Publishers, 1908.

In this book of 496 pages the compiler presents, in condensed form, practical methods and suggestions compiled from the dental literature of the last decade.

These articles have been grouped under various heads. Part 1: Operative Dentistry has ten chapters. Chapter 1 contains articles pertaining to preparation of cavities, filling teeth and associated subjects. Chapter 2, Treatment and Filling Teeth of Young Children; Chapter 3, Porecelain Inlays; and the remaining chapters are devoted to Local Anesthesia, Hypersensitive Dentine, Special Drugs for Special Cases, Antisepsis, Prophylaxis, Sterilization, Antral Affections, Abscess, Extracting, etc., Pulp Devitalization, Root Treatment, Pulp Removal, Root Filling etc., Pyorrhea Alveolaris and Associated Conditions and Operative Dentistry miscellaneous.

Part 2 treats of Prosthetic Dentistry.

Chapter 1: The Construction of Dentures, Impressions, Models, Repairing Dentures, Dies and Counter-dies, Solders and Soldering, etc.

Chapter 2: Crown and Bridge Work.

Chapter 3: Orthodontia.

Chapter 4: General Information.

While all the articles will not meet approval of any one man, everyone can find some suggestions that will be helpful to him.

The arrangement of the articles under various headings is all right in a way, and perhaps will be a sufficient guide to some particular formula or method the dentist may wish to locate, but it seems that were the book indexed it would have been still better. But for one of its kind the work is a creditable production and represents an immense amount of work on the part of the compiler.

The Nasal Administration of Nitrous Oxide. By Frank Coleman, L. R. C. P., M. R. C. S., L. D. S., Eng.-London, C. Ash & Sons, 1908.

In this little pamphlet of 24 pages there is much good instruction in the administration of nitrous oxide through the nose.

The author mentions two methods of administration through the nose—in one, anesthesia is attained in the ordinary way, and when complete the face-piece is removed, and the nose-piece applied.

In the other method, which he prefers and follows, the nose-piece is applied from the commencement and the anesthesia is conducted as he has fully described in the book.

This method has the advantage of the patient breathing from the commencement in the manner in which you wish him to continue throughout the administration, the mode of procedure is not suddenly changed, nor is the type of respiration altered, as is frequently the case under the other method. The author believes that the contra-indications for nasal administration of nitrous oxide are very few.

Taber's Pocket Encyclopedic Medical Dictionary. Edited by Clarence W. Taber, Author of "Taber's Medical Dictionary for Nurses," "The Secret of Sex," Co-Author of "Eales' and Taber's Anatomical and Physiological Chart," and Nicholas Senn, M. D., Ph.D., LL.D., C. M., Professor of Surgery, University of Chicago; Professor and Head of the Surgical Department Rush Medical College, Chicago; Surgeon-in-Chief St. Joseph's Hospital; Surgeon-General of Illinois; Lieut.-Col. and Chief of Operating Staff with Army in the Field, Spanish-American War, etc., etc. Laird & Lee, Chicago. Flexible leather, \$1.50.

This is one of the most useful and instructive hand-books issued in a decade, and should have a place on the desk of every dentist, not stowed away in a pigeon-hole, but right at his hand, ready for immediate reference when needed, or when the owner has a minute or two between cases that may be devoted to pleasant study. The time has passed forever when ignorance of at least the rudiments of medical and surgical terminology could be excused in the dentist. He is today looked upon as a professional man, an educated man; and the educated man is one who must know far more than the requirements needed in the pursuit of his daily avocation. As to the work itself, we have yet to see such another volume so packed with encyclopedic information upon technical subjects. The definitions are exhaustive and most complete; the subjects cover the entire field; while the pronunciations clearly given are worth a dozen times its price to the man who cannot afford to be incorrect.

Blakiston's Sectional Manikins. Head, Oral Cavity with the Pharynx and Larynx, Eye, Foot, Hand, Liver, Kidney, Stomach, Nose, Ear, Lungs and Heart. P. Blakiston's Son & Co., 1012 Walnut St., Philadelphia. Stiff boards, \$1.50.

For the dentist and all other men who desire or have need of general knowledge of anatomy, especially of the head and face, that must be obtained without a long course of special training, this little book is of immense value. The manikins are practical reproductions of sectional dissections, showing the location and relative importance of every part—nerve, muscle, artery, vein and osseous structure, and must impress upon even the hasty examiner their importance as a factor in education. More reliable information concerning the structure of our bodies can be obtained from an hour's study of these manikins than can be had in any other way by weeks and months of application. As an adjunct to the anatomical text-book, this work is simply invaluable. The work is especially commended to dentists, for the reason that the immense strides now being made in that profession require a far more accurate knowledge of the structure of the body than is ordinarily enjoyed; and the busy dentist will find here portrayed, in the most graphic and impressive manner, just the things he wants to know and must know.

It is with great pleasure that we learn from the publishers, P. Blakiston's Son & Co., Philadelphia, that "Johnson's Operative Dentistry," reviewed in this magazine in the issue for November, is meeting with great favor at the hands of the profession. The first edition was exhausted in November; a second was printed in December, and at this time indications are that a third edition soon will be needed. The syndicate of men who collaborated in the production of this work embraces some of the strongest men in the profession; while the work is practically applicable to the every-day needs of operating room and laboratory.

BBETTER be just and generous. You never can tell
how soon the other fellow may have the screws
on you.

—Byron Williams

CORRESPONDENCE

WAKE UP!

Reputable dental colleges and their graduates, as well as their students, should feel insulted by seeing the fact that their diplomas are not recognized by medical faculties, if a graduated dentist wants to matriculate in a medical college.

We find in the annual announcements of medical colleges that applicants holding a degree of B.A., B.S., Ph.B., etc., may be admitted to the sophomore class, but dentists are excluded.

Why?

Do not reputable dental colleges teach their students already in the freshman year anatomy, biology, physiology, materia medica, chemistry, etc., and continue this through the whole three years' course?

Has not each dental student to dissect a body from head to toe? What more do colleges of science teach their students about medical subjects?

Wake up! dental colleges, graduates and students, and fight for your right and your honor, or your degree and diploma will not be any better than that of an honest shoemaker, barber or bricklayer.

JULIUS A. T. KRIEG, D.D.S.

Chicago, Ill.

DR. TAGGART AND THE DENTAL PROFESSION

THE editorial in the Dental Review for February entitled "The Tragedy of the Dental Profession," states the case fairly and truthfully and makes pretty clearly apparent the "tragedy" of the situation as it related to Dr. Taggart. It seems necessary, however, if it is possible, to bring more sharply and clearly to the attention and the consciences of the dental profession the duty that we owe to Dr. Taggart.

There is no doubt whatever that the dental profession will continue to maintain its opposition to the holding, by members in good standing, of "process patents," which require an office license or the payment of royalties upon operations performed, but moral questions are apt to have several aspects, and those who have insisted strongly upon the relinquishment of the legal rights and emoluments which an inventor might receive under such a patent, have mostly ignored the responsibilities which the profession must assume when it insists upon such an ethical requirement;

nantly, the obligation to prevent or remedy any instances of gross injustice that may arise by reason of obedience to that ethical rule. If there are any who are insisting upon such compliance by Dr. Taggart and have not yet fully discharged their personal obligation to him, it is worth while for them to consider carefully whether they belong to that old sect that received the indignant and scornful rebuke, "For they bind heavy burdens and grievous to be borne, and lay them on men's shoulders; but they themselves will not move them with one of their fingers."

It is to be noted that before taking any steps to enforce his supposed legal rights under his process patent, he waited at least eight months after his machines were ready, during which time the dental profession had ample opportunity to show their appreciation of the obligation above referred to and their disposition, if they had any, to treat Dr. Taggart with something like justice.

Dr. Taggart has spent two years, more or less, of his time, all of his money, and strained his credit to the limit, and, whether willingly or unwillingly, he has given it all to the profession, and the profession is in full possession of it all today.

Now, the solution of this situation is not, chiefly, by organizations and subscriptions, and resolutions by societies, or even by appropriations from society treasuries,—all these may help some, but the only proper and adequate solution is by the individual action of every man who is casting inlays.

Probably there are not more than a dozen men in the United States who would dare to say positively that they would now be making any cast inlays except for the work and the announcements done by Dr. Taggart. The making of inlays has a money value to every man who is making them, and that value he has received from Dr. Taggart and owes to him a just compensation in money for that value received. The whole matter resolves itself, in this aspect of it, into a question of simple, common, every-day honesty,—exactly the same kind of honesty we all expect our patients to practice toward us, and that we wish them to believe that we practice ourselves. There are probably at least one thousand dentists (perhaps there are two thousand) in the state of Illinois, who are making cast inlays. If each of these men will pay his debt to Dr. Taggart, in amount having proper relation to the money value of the process to himself, or, more properly still, by buying Dr. Taggart's machine, the price of which represents Dr. Taggart's judgment as to what he is entitled to receive from those who use his process, it need not be doubted that Dr. Taggart will gladly relinquish all attempts to collect office licenses or royalties. Ingratitude and dishonesty are pretty hard words, but it is doubtful if any sophistry, or special pleading, or extenuating circumstances will enable any man to squirm out from under them if he refuses or neglects to repay his pecuniary obligation to Dr. Taggart.

—EDMUND NOYES.

THE CAST GOLD INLAY

We are seeing so much about who originated the "cast filling." I desire to call attention to the fact that at a meeting of The Northern Ohio D. A., held at Cleveland in 1890, I believe, Dr. Jere Robinson explained a cast filling made of a cheap alloy that, when fused, would "marry" with gold foil, three or four thicknesses of which were to be pressed on to the alloy while molten. Cavity preparation, impression, model and setting with cement practically the same as now. Dr. R. was from Michigan, and his son and granddaughter were present at that meeting. The doctor's remarks were of the nature of an impromptu talk and perhaps not recorded.

Courteously yours,

S. A. PANCOAST.

Ashtabula, O., Jan. 8, '09.

JOINING DENTAL ASSOCIATIONS

I want to mention a few of the mistakes made by a great many of the younger members of the profession, in regard to joining a Dental Society.

A great many men graduate from Dental Colleges and open offices, and many are often heavily in debt, especially if they have provided their own finances; and when they receive an invitation to attend a Society meeting, do not feel that they can afford to attend on account of the expense. Let me say, you never make a greater mistake in your life than when you decide not to go. I do not believe any profession has made the advance in the last ten years that the Dental Profession has made. The different methods of saving teeth and correcting irregularities and curing diseases of the mouth that have been advanced in that time seem to be almost miraculous.

Many dentists say, "Oh, well, I can get all that is done at a society meeting in the Dental Journal." That is true, in so far as a few of the papers read are concerned, providing you are willing to wait from six months to a year to get the same.

The clinics are another proposition. The man who attends the society meetings attends the clinics and sees the demonstrations, and as a result, is enabled to utilize them in his practice before the dentist who stays at home has even heard about them, and thus he gains an advantage over his competitors.

The society man has also demonstrated the latest and most improved instruments and office equipment, and the result is he is constantly on the alert to improve his surroundings, not only for his own comfort, but for the benefit of his patients as well.

There are some who say that a great many things presented at a society meeting are not practicable. Remember, that is a matter of opinion

only, and what may be practical in your judgment might not be considered so by your colleagues. I believe that the society meetings of today form the best post-graduate course the average dentist can afford, and we should all get the habit—

KEEP A-GOIN'.

If you strike a thorn or rose
 Keep a-goin:
 If it hails or if it snows
 Keep a-goin:
 'Taint no use to sit and whine,
 When the fish ain't on your line.
 Bait your hook an' keep on tryin'
 Keep a-goin.

G. D. EDGAR, D. D. S.

METHOD OF SETTING INLAYS

By Edward S. Barber, Chicago, Ill.

My method of setting inlays has been to wash out the cavity thoroughly with a stream of warm water, then to pack cotton rolls on both sides of the tooth to be filled, if in the lower and on the buccal or labial side of the tooth; if in the upper, insert the saliva tube under the tongue, which must be kept from touching the tooth during the operation.

I then wipe out the tooth with dry cotton, followed by cotton saturated with warmed alcohol, then dry cotton again, and dry with blasts of warmed air. The inlay I dip in alcohol and pass through the flame to burn away all moisture. The cement is then mixed and inserted in the cavity and the inlay jarred into place. After I am sure the inlay cannot be forced down deeper, I wipe away the surplus cement, and coat with sandarac varnish to prevent the moisture reaching the cement till it has had sufficient time to set.—*Dental Review*.

CAST GOLD INTO A GOLD MATRIX

Dr. J. Howard Gaskill, of Philadelphia, exhibited at a recent meeting of the Pennsylvania Association of Dental Surgeons a cast gold inlay made by first fitting to the cavity a thin pure gold matrix; into this, while in position in the cavity, he placed wax and made in the usual way a wax model. The wax model with the matrix was then invested and the casting made. The inlay fitted excellently, the thin overlapping margins which this case required were perfect. This method insures excellent margins and avoids the nodules which so often prevent cast inlays from fitting satisfactorily. The gold of the casting seems to follow the gold of the matrix. The casting process has an advantage over flowing gold into the matrix, as there is no risk of melting the matrix, nor yet of the gold sweating through and disturbing its fit, as so often happens to a gold or platinum matrix when the inlay is built up under the blowpipe.—*Dental Brief*.

PRACTICAL SUGGESTIONS

TO REMOVE BLOOD FROM ROOT CANALS

By J. P. Buckley, Chicago

One of the factors to be observed in removing pulps from teeth and the subsequent treatment is to preserve the color of the tooth. The cause of many teeth darkening after the pulp has been removed can be traced directly to the failure to remove the blood from the dentin of the crown of the tooth. The far too prevalent practice of wiping out the bloody canal with a solution of hydrogen dioxid, blindly thinking the blood can be removed by this means, cannot be too strongly condemned. The hydrogen dioxid simply decomposes the blood within the tooth structure, oxidizing the iron of the hemoglobin, and the gases evolved in the decomposition force the pigment into the tubuli, which, if left (and it is difficult to remove it), will cause the tooth to darken in almost every instance. In articles previously published I have shown that ferric oxid is largely responsible for the discoloration of teeth from pulp decomposition. Therefore, we should avoid forming within the tooth structure the pigment which we know will discolor teeth. The color of a tooth does not depend upon the life and vitality of the pulp, but upon the array of colors in the dentin which are reflected through the nearly colorless and transparent enamel. If, then, these colors are not changed by our failure to remove the blood or by the use of staining remedial agents in the subsequent treatment following pulp removal, the tooth will not discolor.

To remove the blood from the canal, alcohol can be used or even better than this agent is nature's greatest solvent, water. The water should, of course, be sterile, and if convenient a little sodium chlorid (common salt) can be added to it. By this means the blood can be completely removed—not decomposed in the canal and forced into the structure of the tooth.—*Pacific Dental Gazette*.

COPPER AMALGAM FOR DECIDUOUS TEETH

By S. G. Walton, Cincinnati, O.

It is conceded by most of the profession who pay especial attention to children's teeth, that copper amalgam is the best all round filling material we have to-day for the temporary teeth. It is non-irritating and does not wear away like cement or gutta-percha, and possesses better preservative qualities against recurrence of caries. Some strongly favor the use of oxy-phosphate of copper cement, on account of its being a non-conductor and antiseptic, and because it will adhere to damp walls. *Items of Interest*.

THE USE OF A NEW ANTISEPTIC POWDER IN PYORRHEAL POCKETS

By H. Otis Logue

In the treatment of pyorrheal pockets it is difficult to retain a liquid antiseptic in the spaces for any length of time, and thus a frequent application of the antiseptic is necessary. It has therefore been my endeavor to obtain an efficient antiseptic powder that would remain *in situ* and produce a continuous beneficial effect upon the diseased area. My experience demonstrates that methylene-disalieylic-acid-iodid (formidin) fulfils these requirements most perfectly. Its chemical formula is $C_{15}H_{10}O_6I_2$, and it is a compound derived from iodine, formic aldehyd, and salicylic acid. In the presence of alkaline secretions it decomposes, producing the characteristic reactions of its constituent parts. As formidin is tasteless and has a slight, rather pleasant odor, and as it is devoid of toxic effects, it can be employed with perfect safety and without any disagreeable symptoms ensuing.

The results of this treatment were eminently satisfactory both to the patient and to myself, and as formidin can be tolerated by the most sensitive patient without too frequent applications and without any disagreeable effects, I believe it to be one of the most efficient methods at our disposal for overcoming this condition.—*Dental Cosmos*.

SUGGESTION ABOUT ARRANGING ARTIFICIAL TEETH

By S. C. G. Watkins, Montclair, N. J.

You cannot put too much time and trouble on a set of artificial teeth, whether you are properly paid for them or not. If you make them at all they should be made as well and as natural as it is possible to make them. Make them with the idea of restoring what has been lost in that individual through the loss of the teeth. If the patient has lost the teeth from the effects of pyorrhea, irregularity, deformity, or any other cause, the new teeth should not be put in the mouth in a stiff, hard row, but should be made in such a way that they will have a slight suggestion of the way the natural teeth originally were in the mouth, even to the extent of suggesting slightly the trouble which caused the loss of the teeth.—*Items of Interest*.

TO CONTROL MOISTURE WHEN THE DAM CANNOT BE USED

By B. Bennette, Edinburg

When filling lower teeth, where the application of rubber dam is for some reason impracticable, proceed as follows: Apply napkin or cotton rolls and clamp, and beneath the napkin on the lingual side place a piece of sterilised sponge, this will absorb the saliva and keep the field of operation dry better than cotton wool; in quite a long operation it will not be necessary to renew the sponge more than once or twice, while the napkin itself keeps perfectly dry. When sponge is used in conjunction with the saliva ejector in this way, it proves the greatest comfort to both operator and patient.—*British Journal of Dental Science*.

SULPHO-CARBOLIC ACID—A VALUABLE DRUG

By Elgin MaWhinney, Chicago

Several years ago I called attention to the usefulness of pheno-sulphonic acid in the treatment of large pus pockets in the alveolar process about the roots of teeth. The value of this preparation has never gained much recognition principally because of the difficulty of getting the pure drug. I think Dr. Geo. W. Cook was first to suggest making it by combining equal parts of melted phenol crystals and C. P. sulphonic acid, heating slightly to facilitate union. A good deal of difficulty has been experienced in getting the necessary pure drugs with which to make the combination and without which union will not take place. About two years ago I learned that Merck makes this preparation and supplies it to the trade under the name of sulpho-carbolic acid. After two years' trial I find Merck's preparation even more useful than that I formerly employed. I recommend it for the treatment of large alveolar absorptions about the apices of roots of teeth in chronic alveolar abscesses. It should be used to burn out these pockets in exactly the same manner as most dentists have been using phenol—the root canals should first be cleansed and dentine deodorized. The pocket and sinus should next be freely washed with a saturated solution of soda bicarbonate to cleanse and empty them of pus, when after the necessary precautions are taken to avoid burning the soft tissue the sulpho-carbolic acid is forced through the root canal and out of the sinus. In cases of recent origin, or semi-acute cases where there is no perceptible bone absorption, this agent is not indicated. I heartily recommend it in the treatment of caries of bone and necrosis about the jaws in exactly the same manner as we now use aromatic sulphuric acid.

I have previously suggested its value in treatment of deep pus pockets in pyorrhea alveolaris both before and after sealing. I now wish to recommend its application to the necks of teeth which are covered with hard black serumal calculus. All who have had experience know that this variety of deposit is very hard and often exceedingly difficult to remove, especially when high up and under the gum tissue and more especially when deposited between the roots of upper molars. It is now my practice to treat these cases with sulpho-carbolic acid, full strength, three or four times before sealing is attempted. A platino-iridium broach wrapped with a few strands of cotton should be used with which to apply it. The teeth necks should be first cleansed of debris and mucus so the medicine can penetrate the calculus. It is best to take two or three teeth at a time and keep them dry during, and for a minute after applying, after which they should be flooded with a warm antiseptic solution. No special precautions are necessary so far as the soft tissue is concerned, as it is not very escharotic, in fact I allow it to flow around the gum margins freely and find it relieves the hypersensitiveness and inflammation of gums which is usually present in these cases. I repeat this application three or four times two days apart. I find by experience that the calculus is much easier removed after these applications; indeed, in many cases the patient will have removed much of it by the use

of the tooth brush during the days between applications. In many instances I have brought away large pieces of calculus from under the gums on the cotton wrapped broach while applying the medicine.

A case in point will illustrate the benefit of this treatment. About two years ago a gentleman came by appointment to have his teeth cleaned. Upon examination I found the gum tissue and alveolar border around every tooth had been absorbed and ulcerated away until more than half the length of the teeth roots stood exposed. They were, in fact, not exposed for they were covered by a thick coating of black or brown calculus. A sitting of two hours was required to scale one tooth, so hard was this deposit. When I realized that I had about thirty such teeth to scale, I became discouraged and so did the patient. I concluded to try the sulpho-carbolic treatment. After five applications I scaled and polished the remaining teeth in a single hour. I could relate similar experiences with probably two hundred cases until at the present time it has become my regular method of treatment in all bad serumal calculus cases.

In very deep pyorrhea pockets, where the gum is nearly in normal position but sensitive and highly inflamed and the deposit is consequently very difficult of access, I simplify the case by packing the pocket with a rope of cotton or gauze with a 25 per cent. aqueous solution of sulpho-carbolic acid. By allowing the pack to remain for twenty-four hours, I not only soften the deposit, but benefit the necrotic area, as well as open the margin of the pocket so I can get free access and permit of scaling and polishing without lacerating the gum margin, or producing much pain. I find this drug penetrates inflamed gum tissue and consequently its germicidal power is of great value in these pus cases.

The question naturally arises, "what effect does the application of this agent have upon the cementum?" In answer to which I can only say I have never been able to see any bad effects. I do not think the drug remains in contact with the cementum long enough to decalcify it in the least.

I also make use of this drug to aid in removal of pulp nodules and to open up small canals which are closed by dried blood or hardened pulp tissue. I find it does quite as well as sulphuric acid and does not irritate the tissues in the apical space nearly so badly if a little should accidentally pass through the apical foramen as does the latter preparation.—*North-western Dental Journal*.

LIME-WATER FOR VISCOUS SALIVA

In patients whose saliva is viscous and whose teeth are covered with glutinous matter, apply a wash of lime-water, which will improve this condition of the saliva, and remove the morbid matter better than anything else. The constant use of lime-water in such mouths finally changes the character of its secretions, and simplifies the keeping clean of the mouth and teeth. *La Odontologia*.

DETAILS TO BE OBSERVED IN SWAGING METAL PLATES

By W. T. Wallace, Henderson, N. C.

Be sure to take the impression with the compound of plaster, pumice and whiting as described in my former article: take fine talcum powder and spread over the impression, then a wad of cotton and wipe the talcum into the fine pores of the impression, which will give a smooth surface. Place the impression directly over the center of the base block in such a manner that the model or die will be about one-half inch thick in the palate. Be very careful to build up around the edge of the impression on the tray with the pumice and plaster compound so that the metal will not run through and so that the model will fill out full at the heels. Heat the base block and impression to the same temperature as the fusing point of the die metal. Do not heat the die metal too hot, but just hot enough to pour, and pour carefully and quickly. Be sure the metal has cooled before separating from impression, to avoid fracture. After separating, carefully oil the die with glycerin and select a blank plate to conform fairly well to the model or die. See that it is annealed, then cover the die with a piece of soft muslin, take another piece of muslin and fold several times to spread over the plate, then take the horn mallet and tap over the folded muslin to conform the plate to the die: anneal carefully and place in the press.

Be sure to place a sheet of rubber dam over the plate slightly larger than the plate to prevent the rubber counter die material from getting between the plate and die: place in the press and turn down only moderately hard, remove and if the plate is buckling tap it out with horn mallet, anneal and place in press. Now apply heavy pressure: remove and trim plate to size desired: try in the mouth and if the fit is right place on die and take line graver one-sixteenth inch wide and cut spurs for retaining rubber, anneal and place in press to see that the plate fits perfectly, then apply wax and get the bite: but before trying plate with wax in the mouth the palate of the plate must be cleaned with a saturate solution of caustic soda and rinsed in pure water. A groove should be cut across the die at back part of plate so the edge of the plate will press slightly into the soft tissues, but must not rest heavy on the hard plate. By using the muslin in conforming the plate to the die, the plate will not be bruised as by the old methods, but will retain the original polish.—*Items of Interest.*

PREVENTING CONDENSATION ON MIRRORS

Among recent British patents applied for is one claiming to be an improved compound for treating glass surfaces to prevent the condensation of moisture thereon (No. 21,968 of 1907). It consists of two parts of common candle wax to one part of pure glycerine. These ingredients are mixed thus: The candle wax is reduced to a liquid state and the required amount of glycerine is poured upon a metal tray, which is previously warmed to prevent too rapid solidification of the wax. The liquefied wax is then poured upon the glycerine in the tray and is rapidly and thoroughly

mixed therewith. As soon as the mixture begins to set it is placed in suitable molds of any required shape. The candle wax used by the inventor is composed of pure beeswax with any suitable vegetable wax, such as Japan wax, with a small proportion of paraffine. The glass surface to be treated should be cleaned and dried and the composition rubbed slightly over it. The glass is then rubbed briskly with a slightly warm cloth until all traces of the composition disappear. The glass will then take on a highly polished aspect, and the condensation of moisture upon the surfaces so treated is effectively guarded against. Mirrors thus treated have shown no trace of moisture when breathed upon. It is also said that the effect of the compound upon the glass surface is not destroyed by subsequent washing of the surface to remove dirt.—*British Dental Journal*.

HOW MUCH MERCURY?

By G. V. Black, Chicago

To make a strong filling and one that will have close margins, get first the right proportion of mercury. Mix and work the material until the mass is perfectly smooth and plastic; then it should take the finest skin markings of the fingers. Continue the kneading until the first slight evidence of stiffening becomes apparent and then make the filling quickly. It should stiffen at once on being pressed into the cavity, so that it will not draw back from the walls when the instrument is withdrawn or move again when more material is pressed upon it. Do not mix a little in the mortar and then roll it a moment in the hand and place it in the cavity half or less than half amalgamated, because you will never have it in condition to make a good filling when mixed in that way. The filling will not shrink nor expand if the alloy is right. But it is not in any condition to make a filling that will ever become strong or good, and until we amend the mixing we will not have alloy fillings that are good. The working of an alloy, in getting the conditions and making good fillings, seems to be more difficult to learn than the making of a gold filling, but when it is once learned it is not so very difficult to do. But we must learn the manipulation just as we have to learn the manipulation of gold, and just as long as the body of the profession is careless about it we will have poor amalgam fillings.—*Review*.

CHECKING PORCELAIN FACINGS

By P. S. Struble, Holyoke, Colo.

During the two years I have been in practice I have continually used this method, and I cannot recall but one checked facing during that time. I heat the case slowly. Immediately after soldering I wait until the redness leaves the gold, then break away the investment and plunge the piece in sulphuric acid, then in water. I use but little caution in placing borax on the work in soldering, as I do not believe that borax will check the facings. I think rapid heating is the cause of most facings checking. Also, the careless bending of the pins. I never bend the pins.—*Western Dental Journal*.

OBITUARY

DR. WILLIAM H. DORRANCE

Friends of Dr. W. H. Dorrance will be pained to learn that he died in Detroit, Mich., Friday, January 22, 1909.

Dr. Dorrance was born in Albion, Orleans county, New York, August 29, 1842, where he received his early education. After graduating from the Albion academy he took up the study of dentistry in the dental office of Phillips & Straight in Albion, without any intention, at the time, of following the profession. Continuing to some extent in this line of work to the outbreak of the Civil war, he felt constrained to enlist. He served the cause of the Union faithfully under Gen. McClellan's command, taking part in the battles from Bull Run to Antietam, and was discharged after serious illness in 1863. Some time later he settled at Jackson, Mich., where he began the practice of dentistry.

In 1877 he was appointed demonstrator in the University of Michigan College of Dental Surgery, to succeed Dr. W. H. Jackson. Two years later he was promoted to full professorship with the title of Professor of Prosthetic Dentistry and Metallurgy. He was a member of the State Dental Association, which was instrumental in organizing the Michigan Dental College in 1875, and was president of the association at the time the college was reorganized and made an integral part of the University of Michigan. His degree of Doctor of Dental Surgery was taken in 1879.

His many words of kindly encouragement will never be forgotten by his former students. Endowed with an exquisite delicacy of soul, true nobility of heart and superior qualities of mind, the charm of Dr. Dorrance's personality seldom failed to win the admiration, esteem and love of all with whom he had intercourse.

Dr. Dorrance's highly artistic temperament manifested itself in all his productions, many of which were of a non-professional character. He engraved beautifully. Every product of his deft fingers bore the traits of an infinitely delicate touch and revealed the natural and educated artist.

Dr. Dorrance was a prominent Mason, having gained his thirty-second degree. He was a member of the Royal Arcanum, the A. O. U. W., and the G. A. R. He was a member of various dental societies and the Washtenaw Medical Society. At the last meeting of the First District Dental Society of Michigan, Dr. Dorrance was made honorary member for life. He was a charter member of the Delta Sigma Delta fraternity.

Dr. Dorrance was married to Miss Clara E. Baldwin, of New York, in 1867. She and two children survive him.

SOCIETY ANNOUNCEMENTS

INTERSTATE DENTAL FRATERNITY

The Board of Governors of the Interstate Dental Fraternity will convene for the annual business meeting of the Order at Old Point Comfort, August the 1st, 1909. The annual banquet will occur during this week and due notice thereof will be sent to the members as soon as arrangements can be made and the exact date fixed. It is hoped that the Fraternity will meet in large numbers on this occasion.

DR. R. M. SANGER, National Secretary.

East Orange, N. J.

ALUMNI ASSOCIATION OF THE COLLEGE OF DENTISTRY, UNIVERSITY OF IOWA

The sixth annual meeting of the Alumni Association of the College of Dentistry of the State University of Iowa will be held March 9th and 10th, 1909, in the Dental College Building at Iowa City, Iowa. A profitable meeting is assured, with good clinics and papers. All ethical practitioners are requested to reserve the dates and plan to attend.

LEON L. BRANSON, *Secretary*, Iowa City, Iowa.

SOUTHWESTERN MICHIGAN DENTAL ASSOCIATION

The annual convention of The Southwestern Michigan Dental Society will be held in Kalamazoo on April 13 and 14. A meeting of unusual attractiveness has been arranged. Papers will be presented and a splendid line of clinics will be given. That new and all-absorbing subject, "The Casting Principle," as applied to inlays, crown and bridge work and metal dentures will be most exhaustively treated by men of reputation and wide experience. You positively cannot afford to miss this meeting, so mark these dates off your appointment book today. Headquarters will be Burdick Hotel.

C. V. JOHNSON.

QUIZ CLASS FOR BOARD EXAMINATION

A Quiz Class will be organized commencing about April 15th, for the benefit of those wishing to review for the California State Board Examinations in June. For further information regarding same, address,

DR. J. GEO. KANOUSE, 602 Lankershim Bldg., Los Angeles, Cal.

The Alumni Association of the St. Louis Dental College (formerly Marion-Sims) will hold their annual clinic at the college building, Grand avenue and Caroline street, about May 20th or 25th, '09.

An excellent program is being prepared. Special attention is being given to the clinical program.

All ethical members of the profession are cordially invited to be present. Program and exact date to be published in later issues of this journal.

DR. S. T. McMILLIN, *President.*

DR. JOHN B. O'BRIEN, 5761a Etzel avenue,
Chairman Publicity Committee.

NATIONAL DENTAL ASSOCIATION

The thirteenth annual session of the National Dental Association will be held in Birmingham, Ala., March 30 and 31 and April 1 and 2 next.

Dr. James McManus, of Hartford, Conn., Dr. E. C. Kirk, of Philadelphia, Pa., and Dr. L. G. Noel, of Nashville, Tenn., will present essays at the general session. The following program of the sections is announced:

SECTION I.

Dr. Martin S. Dewey of Kansas City, Mo.—A paper on "The Development of the Face."

Dr. C. J. Grieves of Baltimore, Md.—A paper on "The Belconine of Certain Metals in the Mouth."

Dr. H. H. Johnson, Macon, Ga.—"Crown and Bridge Work."

SECTION II.

Dr. Herbert L. Wheeler of New York City—A paper on "Dental Education."

Dr. W. T. Jackman of Cleveland, Ohio—"The Elimination of Fear in the Practice of Dentistry."

Dr. J. R. Callahan of Cincinnati, Ohio—On "Operative Dentistry."

Dr. S. D. Ruggles of Portsmouth, Ohio—On "Nomenclature."

Dr. G. S. Vann, Gadsden, Ala.—"Dental Literature."

SECTION III.

Dr. A. H. Thompson of Topeka, Kan.—A paper on "Comparative Anatomy."

All preparations for the meeting are well advanced and a large attendance is assured.

VIRGINIA STATE DENTAL SOCIETY

The fortieth annual session of the Virginia State Dental Association will be held at the Mecklenburg, Chase City, Va., July 21, 22 and 23, 1909. Every effort is being made to make this the most interesting and successful meeting of our Society. Men of national reputation will give clinics and read papers. All ethical practitioners are cordially invited to attend.

KENTUCKY STATE DENTAL ASSOCIATION

The thirty-ninth annual convention of the Kentucky State Dental Association will convene at Crab Orchard Springs, Kentucky, May 17, 18 and 19, 1909.

We anticipate a most interesting and profitable meeting at this most popular central Kentucky resort. A cordial invitation is extended to all ethical members of the profession.

W. M. RANDALL, Secretary.

TEXAS STATE DENTAL ASSOCIATION

The annual meeting of this association will be held at Waco, June 10, 11, 12 next. To manufacturers, exhibitors and visitors we call attention to the circuit formed by Missouri, (meeting May 26, 27, 28); Oklahoma, (meeting June 3, 4, 5), and Texas, as above. By this arrangement it is expected to secure a larger number of prominent men and valuable exhibits than heretofore. The profession is cordially invited to attend.

J. G. FIFE, Secretary, Dallas, Tex.

MISSOURI STATE DENTAL ASSOCIATION

The forty-fourth annual meeting of the Missouri State Dental Association will convene at Kansas City, Missouri, May 26, 27 and 28, 1909. A good, live program is in course of preparation.

J. F. WALLACE, Corresponding Secretary.

Executive Committee: C. C. Allen, Chairman, Kansas City; F. G. Worthly, Kansas City; D. D. Campbell, Kansas City.

LAKE ERIE DENTAL SOCIETY

The forty-sixth annual meeting of the Lake Erie Dental Association will be held at Hotel Rider, Cambridge Springs, Pa., on May 18, 19 and 20, 1909. All reputable dentists are cordially invited to share in this meeting.

V. H. McALPIN, Secy.

THE highest compact we can make with our fellow
is—Let there be truth between us two forever.
....It is sublime to feel and say of another, I never
need meet, or speak, or write to him; we need not
reinforce ourselves or send tokens of remembrance; I
rely on him as on myself; if he did this or thus, I know
it was right.

—Emerson

AFTERMATH

Newsy Notes

Reading (Pa.) Dental Society elected the following officers for the ensuing year: President, Wm. Meter; vice president, P. S. Mogel; secretary, George S. Schlegel; treasurer, J. T. Bair; executive com-

mittee, O. J. Specker, C. B. Grun; Geo. F. DeLong, chairman.

The annual banquet of the St. Louis Society of Dental Science was held at the Jefferson hotel January 19, 1909. Dr. Richard Summa acted as toastmaster, and responses were made by Rev. J. P. Frieden, Prof. C. M. Woodward, Dr. E. J. Lenzen, Dr. W. E. Brown and Dr. Burton Lee Thorpe.

Dental Surgeon Transferred.—Dental Surgeon George H. Casaday is relieved from duty at the General Hospital, San Francisco, and will proceed to Honolulu, Hawaii, for duty.

Dentist Identifies Teeth of Murdered Man.—Dr. Charles Bowber, a dentist of Port Huron, Mich., positively identified two teeth found in the stove in the Rattle Run Methodist church, as part of a set he manufactured for Gideon Browning, the missing carpenter from Adair.

A gentleman of Plainfield, N. Y., died January 15, as a result of having had a tooth extracted. The tooth gave him much pain and he decided to have it extracted. Immediately afterward all of one side of his face became terribly swollen, and despite the best available surgical attention the trouble continued until death came. Blood poisoning was the alleged cause.

Pennsylvania State Dental Examinations.—Forty five candidates; fifteen passed.

State Dental Surgeon.—Senator Willis of California, has introduced a bill creating the office of State Dental Surgeon at a salary of \$2,400 a year, his principal duties being to visit every State Hospital and other public institutions at least twice a year, and to perform dental services for the inmates. The pulling and the filling of teeth, the fitting of plates and other duties of that nature are stipulated. Senator Willis says that inmates of state institutions suffer greatly because of the neglect of their teeth.

Dentist Suicides.—Dr. W. W. Corley, a leading dentist of Marion, Ala., it is alleged, shot and killed himself at his home, January 16.

Dr. J. Wesley Dowd, a dentist of Norwich, N. Y., fell on an icy pavement and broke his left arm above the elbow, December 30.

Mrs. R. Truchess, who was said to be the oldest woman dentist in this country, died December 14 in Bellevue hospital, New York City, at the age of 78 years.

Plans for Dental Museum

The trustees of the proposed Evans Dental Museum, at Fortieth and Spruce streets, Philadelphia, Pa., are almost ready to begin carrying out the plans of the millionaire dentist. In speaking of the

outlook one of the trustees said:

"The trustees have had conveyed to them property of a value that might be conservatively estimated at \$1,000,000. The litigation is still pending as regards a small portion of this. It is believed, however, that it will be shortly settled favorably to the Museum. This property consists of real estate which will have to be converted into money before it becomes available for the purposes of the institute. The trustees have, however, referred to the Executive Committee the formulation of plans for carrying out the purposes of the will. No definite progress will be made until all litigation

is ended and the entire estate that is to come to the Museum finally assured. The committee, however, will preliminarily consider the question of an adequate structure to be used for the Museum or Institute."

The relics of the famous American dentist are now in this city. They came packed in 137 cases and are now stored in safe deposit vaults awaiting the time when they may be transferred to their final places in the Museum. The jewels alone, many of them gifts from the dentist's royal patients, are valued at \$50,000.

State Dental Board Appointments

Dr. H. W. Campbell, of Suffolk, and Dr. J. P. Stiff, of Fredericksburg, have been reappointed by Governor Swanson to the Virginia State Board of Dental Examiners for terms of three years each from January 1st, 1909.

Dr. W. W. Evans, a member of the board of dental examiners of the District of Columbia, who has been closely identified with the affairs of that department for several years, has tendered his resignation to the commissioners, to take effect immediately. Dr. Evans stated that he had moved to Virginia, and had given up his dental practice.

On the recommendation of Commissioner Macfarland, Dr. C. W. Cuthbertson has been appointed on the board, to succeed Dr. Evans.

Invents Wireless Torpedo for Warfare

Dr. L. E. Custer, a prominent dentist and x-ray expert, of Dayton, Ohio, has sent to the patent office, at Washington, plans for a 1,000-pound torpedo, costing \$2,000 to construct, which can be controlled from shore or a ship, and which can destroy modern warships.

It is possible, from the operating station, to reverse the movements of the torpedo and bring it back from whence it started, says Custer. Also it is proof against any atmospheric electricity, and will explode at the will of the operator.

The Custer torpedo is equipped with a rudder, controlled by a motor, the latter being connected with a storage battery. Means have been provided for reversing the rotation. When the torpedo mechanism is in operation and it is desired to change the condition of the motor, pulsations are sent out from the transmitting station. If the receiving apparatus receives the pulsations from any foreign influence or wireless telegraph waves, from a transmitting station other than that used in connection with the operation of the torpedo, a drum will be moved forward and the connections to the motor will not be changed. The torpedo will be known as the wireless torpedo.

Public Instructor Now Ready

We are informed by Dr. Patterson, chairman of the committee, that the pamphlet upon "The Mouth and Teeth," published by the National Association, is now ready and can be secured at fifty cents per hundred, from Dr. Chas. S. Butler, 267 Elmwood avenue, Buffalo, N. Y.

Opportunities for American Dentists in Holland

Consul Henry H. Morgan, of Amsterdam, says that it is generally admitted throughout Europe that there are no dentists equal to the American and that the American dental colleges are admittedly far superior to the European, with the following result:

In almost every city of Europe there are a number of dentists describing themselves as American dentists, their claim to the title being generally based on the fact of having studied for some time in an American dental college. Of so-called American dentists there are a number practicing in Amsterdam, but there are no citizens of the United States practicing here, and I believe there is an opening for a few bright men, not only in Amsterdam, but in other cities of Holland.

As a rule no one is allowed to practice medicine in Holland without having passed all the examinations prescribed by law. Foreigners, however, who are in possession of diplomas granted in their own country are absolved from some of these examinations

in certain branches of medicine. The examination which would ordinarily have to be passed by an applicant to practice dentistry in Holland would be: (a) examination giving admission to the University; (b) the theoretical dental examination, and (c) the practical dental examination. If the applicant, however, has received a diploma from the dental department of the University of Pennsylvania at Philadelphia; the College of Dentistry of the University of Michigan at Ann Arbor; the department of dentistry of the Vanderbilt University at Nashville; or the Chicago College of Dental Surgery at Chicago, he would be absolved from the preliminary examination mentioned under "a," and would only have to pass the theoretical and practical examinations "b" and "c."

While the law provides that the examination shall be held in the Dutch language, in many cases the examiners who are all familiar with the English and German languages have allowed the applicant to take the examination in a language other than the Dutch. Examinations are held twice a year.—*Consular Reports.*

A Warning to Dentists

The press is warning dentists against a man who, it is alleged, is beating his way from city to city on the pretense that he is a dentist in Philadelphia, Pa., and who, by a plausible story, tries to

borrow a few dollars from his fellow dentists.

He springs his little story in the same old way, and, upon entering a town searches out some dentist, and after making himself known springs the fact that he is a little short of ready money, but has funds in the Union Trust Co. of Philadelphia.

He selects a time when all the banking institutions are closed, and asks for a loan of a certain sum, for which he leaves a check drawn on the Philadelphia company.

The man is described as being about 35 years of age, 5 feet 8 inches tall, 160 pounds weight, smooth face, and was dressed in a dark suit of clothes, black derby hat, long dark overcoat, low, turned-down collar and small four-in-hand tie.

Dental Students to "Hike"

Emulating Dr. Oscar W. Owre, the dean of their college, the dental students at the University of Minnesota are planning to walk to their homes when the university closes next spring. Dean Owre has

just completed his walk from Chicago to Minneapolis during the mid-year vacation and the enthusiastic reports of his trip have influenced the students in their decision.

The plan of the class is that each member shall make the home trip without the use of any vehicle, the start to be made from the dental building on the varsity campus. The "dental hike," as the students call the trip, will be the first long-distance tramp ever attempted by any class at the university. Those who have 200 miles to go are considering the advisability of a short training season.

To Establish Public School Dental Infirmary

The part taken by the Hartford, Conn., Dental Society in the tuberculosis exhibit that was held in Hartford last November, will be remembered by all who attended and witnessed the display of pictures and the demonstrations as to the care of the teeth that were given at that time.

The society has now decided to go a step further and establish a public school dental infirmary in Hartford, in order that children whose parents cannot pay for dentistry may have something done to preserve the children's teeth, and be taught how to care for them and the mouth generally.

Over 1,000 circulars have been sent out to residents of Hartford, who, it is hoped, will be interested enough in the plan to subscribe money that the work may be undertaken. It is hoped that at least \$2,500 can be raised, which will be sufficient to conduct such an infirmary for a year. An office will be hired and a competent dentist will be employed by the society, who will devote his entire time to the work. The society will see to the proper equipping of the infirmary and will keep a close oversight of its management.

Deaths

Dec. 30.—Dr. Louis L. Dunbar, San Francisco, Cal., of heart failure, aged 60 years.

Jan. 8.—Dr. Aaron H. Parker, Brookline, Mass., of paralysis, aged 72 years.

Jan. 9.—Dr. Thomas R. Durboraw, Chambersburg, Pa., aged 68 years.

Jan. 17.—Dr. Frederick W. Hammond, Norfolk, Va.

Jan. 19.—Dr. F. R. Ross, Kearney, Neb., of heart failure, aged 59 years.

Jan. 25.—Dr. J. N. Harris, New Brunswick, N. J., aged 64 years.

Jan. 27.—Dr. Clifford B. Hayford, Toledo, O., aged 46 years.

Jan. 30.—Dr. George W. Frain, Philadelphia, Pa., aged 75 years.

Fires

Jan. 17.—Dental office of Dr. E. W. Moore, Malden, Mass., loss \$1,500, partially covered by insurance.

Jan. 19.—Dental office of Dr. George O. Tuck, Gloucester, Mass.

Feb. 14.—Dr. A. O. Ross, Columbus, Ohio, automobile and garage totally consumed by fire. Loss about \$1,400.

Robberies

Jan. 2. Several dentists of Sacramento, Cal., total loss about \$50.

Jan. 13.—Dr. R. G. Hunn, Springfield, Ill. Loss about \$100.

Jan. 13.—Two dentists of Springfield, Ill., \$200 worth of gold.

Jan. 18.—Drs. E. J. Husband and D. R. Hull, McPherson, Kan., scrap, sheet gold and gold bridging worth \$75.

Jan.—Dr. E. L. Garrett, Abilene, Kan., \$15 worth of gold.

Jan.—Drs. F. A. Kreyer and Stevenson, of Tulsa, Mo., gold crowns to the value of \$150.

Jan. 14.—Gold taken from the offices of Drs. H. L. Dickinson and Jones, of St. Louis, Mo.

Jan. 19.—Dr. H. L. Scott, Hamilton, Ohio, gold and supplies worth \$150.

Dr. L. F. Henes, Hamilton, O., \$30 worth of gold.

Offices of Drs. Frank Craven and D. Glen Rothenbush, of Hamilton, O., were entered also.

Jan. 22.—Dr. W. G. Dalrymple, Ogden, Utah. Among the missing articles are one pair of large office shears with gold plated handles, one envelope opener, one pair of bow eye-glasses, marked "W. G. Dal—," one fountain pen and three or four dollars in cash.

Jan. 28.—Drs. L. G. and L. W. Platt and Dr. A. E. Trefry, of Niles, Mich., large quantity of gold cylinders, crowns and fillings.

Recent Patents of Interest to Dentists

902462—Treating teeth for filling, F. Armstrong, Dunedin, New Zealand.

902463—Dental apparatus, F. Armstrong, Dunedin, New Zealand.

902109—Dental finger-tray, J. G. Powell, Norris City, Ill.

902122—Tooth cleaner, E. E. Sulzer, Philadelphia, Pa.

902796—Combination tooth brush and powder holder F. W. Archer and T. H. Bates, Chicago, Ill.

902942—Dental tool moistener, S. Craig, Clarksville, Tenn.

902562—Dental cement, J. N. Crouse, Chicago, Ill.

903489—Appliance for casting dental gold inlays, V. Macdonald, Melbourne, Victoria, Australia.

903343—Artificial tooth, J. A. Van Vleck, Gallipolis, Ohio.

903344—Dental lip protector, E. C. Wackler, Milwaukee, Wis.

904126—Hand operated plugger, C. H. Hart, Hartford, Conn.

904159—Machine for boxing toothpicks, G. P. Stanley, W. W. Stanley and S. S. Tainter, Dixfield, Maine.

Copies of above patents may be obtained for fifteen cents each, by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.

Dies in Convulsions after Taking Powder

Dr W. F. Templar, the well known dentist, died suddenly Jan. 8, under circumstances which are being investigated by Coroner Ashton, of Brantford, Ont.

While at his dental office he took what he said he thought was a seidlitz powder. Crossing the street, he entered his home, opposite the office and there was seized with convulsions, dying ten minutes later, after making a statement regarding the powders. Whether the deceased took other powders by mistake is not known.

Dr. Templar was about 37 years old.



SNAP SHOT IN THE RANSOM AND RANDOLPH CO., CLINIC ROOM, FEBRUARY 12, 1909.

Toledo Dental Society Clinic

The Annual Clinic of The Toledo Dental Society was held on the afternoon of Friday, February 12, at the clinic room of The Ransom & Randolph Co., and was attended by a large number of the leading dentists of Toledo and vicinity. Twenty-two very interesting and instructive clinics were on the program, as follows:

"Lower Gold Bar Plate for One Side," Dr. Geo. B. Smith, Fremont; "Results of Treatment in Pyorrhoea Cases," Dr. A. H. Breitenwischer, Toledo; "Centrifugal Casting," Dr. A. F. Miller, Sandusky; "Freaks," Dr. L. L. Zarbaugh, Toledo; "Restoration of Decayed and Hollow Anterior Roots with Moldable Porcelain," Dr. H. D. Geiger, Perrysburg, Ohio; "Peso Bridge-Work," Dr. A. Van Ark, Toledo; "Gold Inlays in Incisors," Dr. P. A. Gould, Gibsonburg, Ohio; "Cleft Palate Cases," Dr. J. A. Eppstein, Toledo; "Stunts with Acolite," E. S. Keplinger, Lorain; "The Hawes Flask," Dr. W. H. Tenny, Toledo; "Advantages of Early Treatment in Orthodontia," Dr. Burt Abell, Toledo; "Crown Remover and Broach Holder," Dr. L. L. Sheffield, Toledo; "Something New in Gold Crown Construction," Dr. C. F. Lauderdale, Lyons; "What a Boy Can Do," Dr. W. H. Van Deman, Toledo; "Cleft Palate Work in '57," Dr. C. H. Harroun, Toledo; "Cast Bridge Pier," Dr. D. A. Elwell, Toledo; "Economical Dummy," Dr. A. E. Cole, Toledo; "Cast Inlay," Dr. Ora A. Keiser, Bryan; "Prophylaxis," Dr. M. M. Park, Toledo; "Showing Dr. Wilson's Patient," Dr. A. W. Jamieson, Toledo; "Cast Aerdentalloy Denture by the Vacuum Method," Dr. A. N. Coates, Toledo.

Dental Journal Changes

With the January, 1909, issue, we notice changes in a number of the dental journals. The *Dental Digest* is now published by the Dentists' Supply Co., of New York, and Dr. G. W. Clapp is its editor. New features have been introduced. The *Dental Brief* appeared in a new dress—neat and appropriate. The *Dental Era* has a new cover design, and adds two associate editors. The *Dentist's Magazine* has an entire new corps of editors, as follows: Dr. H. E. Friesell, Pittsburg, Operative Department; Dr. W. L. Fickes, Pittsburg, General Practice Department; Dr. E. E. Belford, Cleveland, Prosthesis Department; Dr. W. E. Newcomb, Cleveland, Orthodontia Department.

Broken Engagements

The matter of charging for broken engagements has often come up in the courts and it has been decided that the dentist has the right to charge for time actually wasted. That is, if he makes an appointment and the patient fails to keep it and he does not use that time for other purposes of his profession, he is entitled to the same fee he would have earned by performing the contemplated operation. If, however, he does use that time operating upon some other person, he cannot collect from the first party. These rulings are justified by the fact that a professional man's time is the capital whereby he earns a livelihood. If a certain part of that is set aside and not used, the one causing the waste by his failure to arrive at the appointed time should compensate the dentist for this loss of capital. But, if there is no loss, there should be no penalty.—*C. S. Ayers, Pacific Gazette.*

The Dental Society

Dentists need the dental society, the dental journal, and the instrument maker. Almost every dentist is a deviser of methods of practice and dental appliances. The instrument maker carries out the ideas of the designer. The journal advertises them. The society shows how they work. The lawyer or the preacher can stay at home and read his books and think great thoughts; not so the dentist, he must look up the latest devices and see them demonstrated. The society is his post-graduate school.—*Dominion Dental Journal.*

Educate Your Patients

The spread of dental knowledge during the last twenty-five years has been accomplished largely by the conscientious dentist, but with all this labor, think how little the average person knows about the dental organs. Here is a portion of the code which should be emphasized, that our mission is not alone to prevent suffering and thus earn a livelihood, but we must be teachers as well. A large portion of our patients are receptive and are willing to accumulate a certain amount of useful information. Do not talk to them in uncertain terms or high sounding phrases, but in the simple language that anyone of intelligence can understand.—*C. A. Cheney, Dental Review.*

Dental Honesty

The only thing to sell anything with is truth. The results are accurate, well known, and therefore scientific. Let the professional man study business science, grasp its fundamental principles and stand by the consequences. Let him make more money in less time by deserving larger fees. Thus he will not only give greater satisfaction to his patients, but he will increase the respect of his profession in the eyes of the world.—*E. J. Perry, Dental Review.*

LITTLE do you know your own Blessedness; for to travel hopefully is a better thing than to arrive, and the True Success is to labour.

Robert Louis Stevenson

THE DENTAL SUMMARY

A Journal of Practical Dentistry

Vol. XXIX

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No. 4

OFFICIAL ORGAN:

The Ohio State Dental Society

The Michigan State Dental Association

The Indiana State Dental Association

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RECURRENT CARIES *

By Russell W. Bunting., D. D. Sc., Ann Arbor, Mich.

THE preservative value of the various filling materials which are used in the repair of carious teeth, is a subject which has interested the dental profession in every age, inasmuch as the success or failure of a large part of the dental operations performed is directly dependent upon this preservative index. For this reason, a great deal of investigation has been made along the line of the exact nature of dental caries and the behavior of the materials which are used for filling. Dr. Miller has written most exhaustively on the subject of caries, has made a study of the anti-septic value of many of our filling materials and has written a very valuable article on the penetration of the various antiseptics which are used in the sterilization of carious dentine. Drs. Black and Ward have done a great deal of valuable work on the manipulation, properties and behavior of alloys, endeavoring to educate the profession as to the proper alloys to use, and the exact methods to be employed in their manipulation. There is then a long line of writers who have treated, scientifically and otherwise,

* Read before the Michigan State Dental Society, 1908.

the characteristics of gutta-percha, cements and gold, and some of the investigations made are exceedingly interesting and valuable. However, the personal equation is so great in any of the operations with filling materials that every man is to a certain extent a law unto himself, in that in his hands a given material will have certain properties, while the same material manipulated by another operator will give entirely different results. It is to be hoped that the efforts of our investigators will so standardize the methods employed in the manipulation of filling materials that those who wish may have a more exact knowledge of their behavior and obtain uniform results.

Dr. Miller, in summing up a discussion of recurrent caries, makes the statement that the failure of the filling to protect the tooth from decay is due to the diminished resistance of the tooth resulting from the inadaptability of the materials, poor manipulation, or subsequent change. He also states in his paper that fillings fail at inaccessible places from a faulty preparation of the enamel at the point in question, incomplete adaptation, and an absence of a final finish—that others fail from a lack of contour and incomplete extension of the filling to include all of the softened enamel. He has also made other observations in reference to the specific fillings which will be referred to later.

It may be said that a filling material, to have all the requisites of a perfect stopping in the repair of the decay of the tooth, must be insoluble in the fluids of the mouth and resistant to the wear of mastication—it should be inserted in a manner that when finished it will restore the natural contour of the tooth, and give perfect adaptation to the walls of the cavity, forming a water-tight filling—and it is also desirable that a filling shall have the property of adhesiveness to the walls of the cavity, and an inhibitory influence upon the bacteria of decay.

A REVIEW OF TOOTH-FILLING MATERIALS. CEMENT.

With these qualities in mind, let us then make a review of the materials which are commonly used in the filling of the teeth, for the purpose of comparison. Beginning with the cements, we have to deal with two general classes—the oxyphosphates and the oxychlorides of zinc. Neither of these has been manufactured in a form that is perfectly insoluble in the fluids of the mouth or that is resistant to the wear of mastication, therefore, a permanent and perfect contour on a cement filling is impossible. It is in this respect that so many of our cement fillings fail and make them the most liable of all kinds of fillings to permit recurrent caries. For instance, in approximal cavities of the molars and bicuspid, even though the contour be completely restored and the adaptation perfect, yet in a comparatively short time the filling becomes roughened on its exterior, allowing food to be wedged in between it and the neighboring tooth, very often causing caries to be inaugurated in the neighbor. Then at the cervical border, the acid reaction of the fermented foodstuffs which are retained, and the acidity of

the gingiva, cause a solution of the filling at that point, often resulting in a deep-seated recurrent caries before the damage has become apparent. The cements possess a certain amount of adhesiveness when applied to the walls of a tooth, but it has been noticed that this is lost with age or in the presence of moisture. The ordinary cements give up acids on the application of moisture to them, so that in many large cavities filled with cement we find, upon their removal, that a large portion of the floor has become softened to a considerable extent, without any discoloration, the decalcification being due to the free phosphoric acid liberated from the filling. Many cements shrink and consequently leak very badly. As to the antiseptic value of cements, Dr. Miller says that the oxychloride is active when fresh but in time loses its value, while the oxyphosphate is entirely without restraining influence.

GUTTA-PERCHA.

Gutta-percha as a filling material presents the characteristics of being insoluble in the fluids of the mouth, but is not resistant to the wear of mastication, or even of the tooth-brush or toothpick. For this reason, it is unsuitable for the restoration of contour, except, perhaps, on the lateral surfaces of a tooth where there is little wear. When properly inserted, gutta-percha has a variable amount of adhesion to the walls of the cavity. As to whether or not this adhesion is uniform enough to make a perfectly water-tight filling and exclude the micro-organisms of the mouth is as yet an open question. Many think that it is not, and Dr. Webster of Toronto makes the assertion that gutta-percha fillings, unprotected by any other material, all leak, while Dr. R. H. Volland of Iowa City takes issue with him, presenting a long line of experiments by which he attempts to prove that cavities filled with gutta-percha will remain aseptic for a long time. It is possible that methods of working and introducing the material may be responsible for the variance in results. Many writers and operators claim that gutta-percha has an antiseptic action, basing this assertion on clinical experience and upon the supposition that the coloring material, having a mercurial base, produces a mercuric oxide to which they attribute the bactericidal influence. However, Dr. Miller makes the assertion that there is no antiseptic property in gutta-percha other than its physical properties.

AMALGAMS.

Amalgams are usually insoluble and resistant to the wear of mastication—there are a few, such as copper-amalgams, which will not withstand many years of wear, but with that small exception they are suitable for maintaining any contour. When properly inserted, they may be perfectly adapted to the walls of the cavity, and when fresh probably form a perfectly water-tight filling. However, all amalgams do not remain in the form in which they are first inserted—some will shrink, others will expand, and in either case the close adaptation of the filling to the wall of the cavity is

likely to be disturbed, affording a means of access for fluids and bacteria. This shifting of the mass of the filling material is variable, and it is likely that our newer alloys, when properly mixed and inserted, have but little change in form. In the ordinary alloys commonly used there is little or no oxidization of their surface, therefore there is no antibacterial influence, but in the copper-amalgams there is a strong antiseptic action, which makes it the greatest preservative which we have for badly decayed teeth.

GOLD.

Gold in all its forms is insoluble and resistant to ordinary wear—can be used to form permanent contours and, if carefully inserted, is capable of being perfectly adapted to the walls of the cavity, making a water-tight filling. However, it is in the lack of care in the insertion of gold fillings, especially in the adaptation to the walls of the cavity, that many of them fail. Many others fail from the weakening or checking of a frail enamel wall in the malleting of the gold against it. Dr. Miller has shown that unannealed gold is antiseptic, while gold which has been annealed is not—he says, however, that there is no reason to believe that the practice of placing of unannealed gold in the bottom of cavities has any appreciable value in this regard.

TIN.

Tin is insoluble, but not very resistant to wear—it can easily be adapted to the walls of a cavity, but is of no use in building out of contours. It is not thought that tin has any antiseptic value, but it is noticed that the dentine beneath tin fillings is usually very hard and free from decay—it is likely that tin has the property of producing sclerotic changes in living dentine beneath itself. In this respect, tin is one of the best tooth preservatives which we have.

Two combinations of tin and gold are used—one in which the two metals are inserted in a combined form, which, after their insertion, seem to form a sort of amalgamation, and produce a filling which answers all the requirements of a good stopping and a great preservative—the other method is that of filling all the inaccessible portions of the cavity with tin, and building out the contour and portions exposed to wear with gold. In this last method we have the beneficial action of the tin, together with the ease of manipulation in the part of the cavity which is most likely to recurrent caries, and the tin is then protected by the gold.

INLAYS.

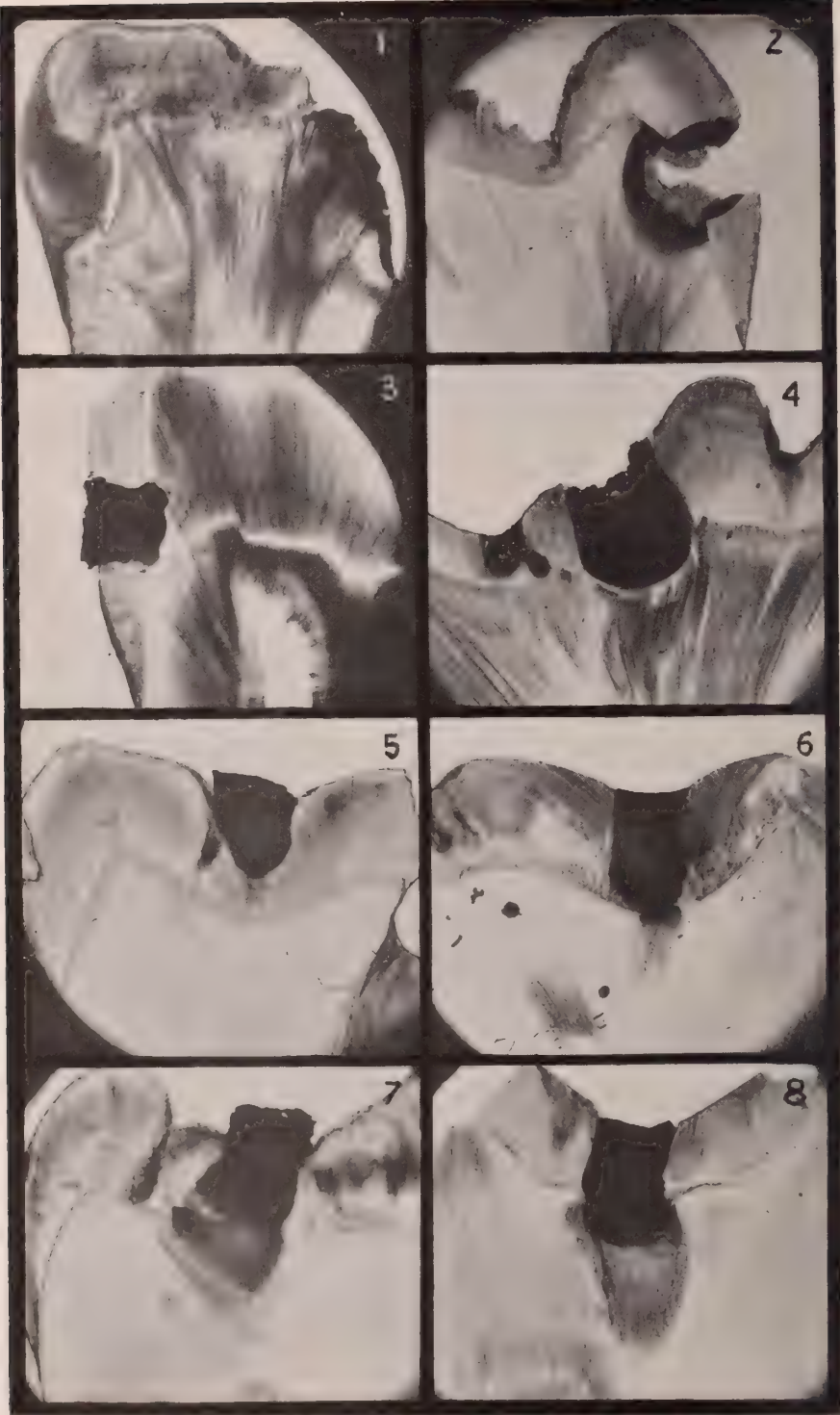
The inlay principle, or the cemented filling in its various phases, makes use of the good qualities of the cement filling—namely, its adhesiveness and adaptability—and covers up its weak points by protecting it from the solutions of the mouth and from the wear of mastication. It is commonly recognized, clinically, that fillings of this class, when properly inserted, rarely have caries re-occur about or under them. Just what the exact nature of

the protective principle is does not seem apparent, but the fact that the protected cement filling is a great preservative of teeth cannot be gainsayed—for example, we have all seen abominably made and poorly-fitted gold crowns, showing every indication of being slovenly pieces of work, which have been in the mouth for ten years or longer, and when we remove them for any reason we often find that the roots beneath, which, previous to the setting, had been decayed, have suffered no further extension of the caries, although the original cavities have been but incompletely excavated.

RECURRENT CARIES.

In all of the writings and work upon recurrent caries, the emphasis seems to be placed on the failure of fillings to form and maintain a permanent stopping, and in all such cases the infiltration of bacteria from the oral cavity has given rise to a secondary caries about the filling. There is no doubt that many fillings do fail from this reason, and clinical experience teaches us that their number is large, but the question that comes to our minds is, "What of the carious dentine which has been left beneath the fillings?" There seems to have been but little work done along this line, and yet when we consider that in filling teeth we are dealing with infectious material which is capable of continuing its growth in the anaerobic conditions beneath the filling: and when we consider how deficient our means of sterilization really are, we wonder just how great a part these bacteria, remaining in the softened dentine, do really play.

My attention was called to this phase of the subject while engaged in work under Dr. Huber, of the Histological department. We have constructed a machine for making thin sections of teeth for histological purposes, which is modeled after that of Dr. Black's of Chicago. This machine is capable of grinding thin sections of hard or soft materials, or a combination of them, without any change in the relation of their parts. In the course of my work, I ground over 100 teeth which contained fillings of various kinds. On the examination of these sections and the appearance of the tooth structure beneath the filling many curious and interesting conditions became apparent. In a large number of them there was a dark area beneath the filling which suggested caries, but it was not always easy to say whether this was a portion of the primary caries, which was left beneath the filling and its further progress inhibited, or whether it was a secondary caries which had made considerable progress since the insertion of the filling. However, there was a good percentage which showed unmistakable signs of recurrent caries, the recurrence usually being along the bottom or lower sides of the fillings. The fillings above these recurrent caries were, for the most part, apparently tight to the walls of the cavity, and no avenues of ingress from the exterior to the infected area were visible. Of course these sections only present a view of one plane of the tooth and filling, and it is possible that the recurrent caries may have entered from some other point in the periphery of the filling, but there were



Figs. 1, 2, 3, 4, 5, 6, 7 and 8.

so many that gave this appearance of being perfectly sealed with recurrence beneath, that it leads one to think secondary caries under a tight filling *may* be possible.

Only about 50 per cent. of the fillings could be said to have completely arrested the progress of caries, but as the larger share of them were amalgam fillings, and as we have no information as to the care of preparation of the cavities, or in the insertion of the fillings, this percentage is no certain criterion of the preservative value of any of our filling materials. In other words, the appearance of these sections does not indicate the probable condition of carefully inserted fillings, but they may serve as an indication to the areas which are most likely to be overlooked, and which, therefore, are in need of more careful attention. It is also hoped, that by further and more extensive work along this line something may be ascertained as to the exact therapeutic value of our common filling materials.

In Fig. 1 we have the appearance of a so-called "White Spot" of caries at the approximal point of contact of a molar. In this area there was no outward apparent lesion, none of the enamel being lost, and yet the carious process has extended to the dentine and a considerable distance into it. We see that the affected enamel is dark in color, and that the affection travels along the line of the enamel rods, narrowing toward the dentine. At the dentine there is considerable lateral spread, between the dentine and enamel, so softening that area that it readily washed out in the grinding. In the dentine are light and dark areas, with considerable discoloration in the original section, indicating the extent to which the dentine has been more or less decalcified.

In Fig. 2 we have what might be called a later stage of Fig. 1. In this the enamel has completely broken down to the dentine, forming a definite cavity. The enamel borders are seen to be dark, showing evidences of decalcification. In the cavity are remains of broken down enamel and dentine, while the dentine at the base of the cavity is being infiltrated by bacteria and their products. Below the actively affected area there is noticed a semi-transparent portion which extends toward the pulp and is a condensation of the dentine—this condensation has inhibited the advance of the caries, and has limited its extent.

Fig. 3 presents a cavity of this class which has been filled with gold. The enamel and dentine on the borders of the cavity have been preserved in good condition, showing no discoloration, although there is a pit in the incisal portion of the dentine border to the bottom of which the gold has not been completely carried. There is some transparency of the dentine noticeable beneath the filling.

Fig. 4 is of a small occlusal cavity in a molar which has been filled with amalgam, extending through the enamel and a short distance into the dentine. The borders about the filling are practically perfect, and the dentine just below the filling is somewhat transparent. There has been a complete removal of decay and a good adaptation of the filling to the walls

of the cavity, preventing any re-occurrence. Two other cases of enamel caries are seen in this section.

Out of the whole number of sections there were a considerable number of fillings which were inserted in fissure cavities of molars and bicuspids, and in every instance in which the cavity did not extend into the dentine to a solid base there was seen decalcification beneath. There were several, of which Fig. 5 is a type, in which the filling did not reach the dentine. In this it will be seen that there is marked decalcification of the border in two places, the larger of the two being a fissure which has been overlooked—the smaller in the extreme base is probably the end of the fissure which the operator attempted to follow out but stopped a little short of the end. There is also an external caries at one border of the filling which comes into a close relation with the large carious fissure.

Figs. 6 and 7 are of amalgam in occlusal cavities which extend to the enamel-dentine junction, and have not been carried farther into the solid dentine. Fig. 6 has almost a perfect enamel border about the filling, except at the base where there is a small decalcification extending some distance into the dentine. It is possible that this is a primary caries and would not have extended any further than it now does. In Fig. 7 there is more decalcification of the enamel without any apparent ingress from the exterior. The caries in the dentine is so marked that it must be either a secondary growth or a very faulty preparation of the cavity. All of the dentine changes are not visible in this plate in that the plane of the section did not follow the direction of the dentinal tubules to the pulp, but was slightly tangential to them, leaving the path of the carious change. The dento-enamel junction seems to be a very vulnerable point in all fillings and likely to recurrence of decay, probably due in part to the ease with which bacteria penetrate laterally between the dentine and enamel and to the difficulty of their removal on account of the extreme sensitivity which is often observed at this border.

Fig. 8 is of another small fissure cavity filled with amalgam. In this case the filling is extended to the dentine and a considerable amount of decalcified dentine is noticed beneath it, while the enamel is perfect and little or no affection of the dento-enamel junction. Probably considerable caries was left in the base of the cavity, and it is noticed that the filling is not completely adapted to the walls in several places. Whether this caries is primary or secondary cannot be determined from the section.

In Fig. 9 we have another amalgam filling of the same class as Fig. 8, but the carious process below is much more marked and extensive. The enamel border is perfect except for a slight discoloration on one side. The whole dentine below is actively affected, the decay extending laterally for some distance and on one side the decalcification unites with that from another cavity on the lateral surface of the tooth. That the filling was faultily inserted is plainly seen from the fact that the adaptation is very poor in several places.

Fig. 10 contains a larger filling in an occlusal molar cavity—amalgam above and cement below—and although the cavity preparation is obviously poor, the filling has arrested the caries. The streaking of the dentine by discoloration is comparable to the change which we saw in the pulpal portion of the caries in previous cases, and the operator in this case has removed the actively carious portion, with its softened dentine and masses of bacteria, and then placed the filling on the slightly affected dentine, arresting further progress.

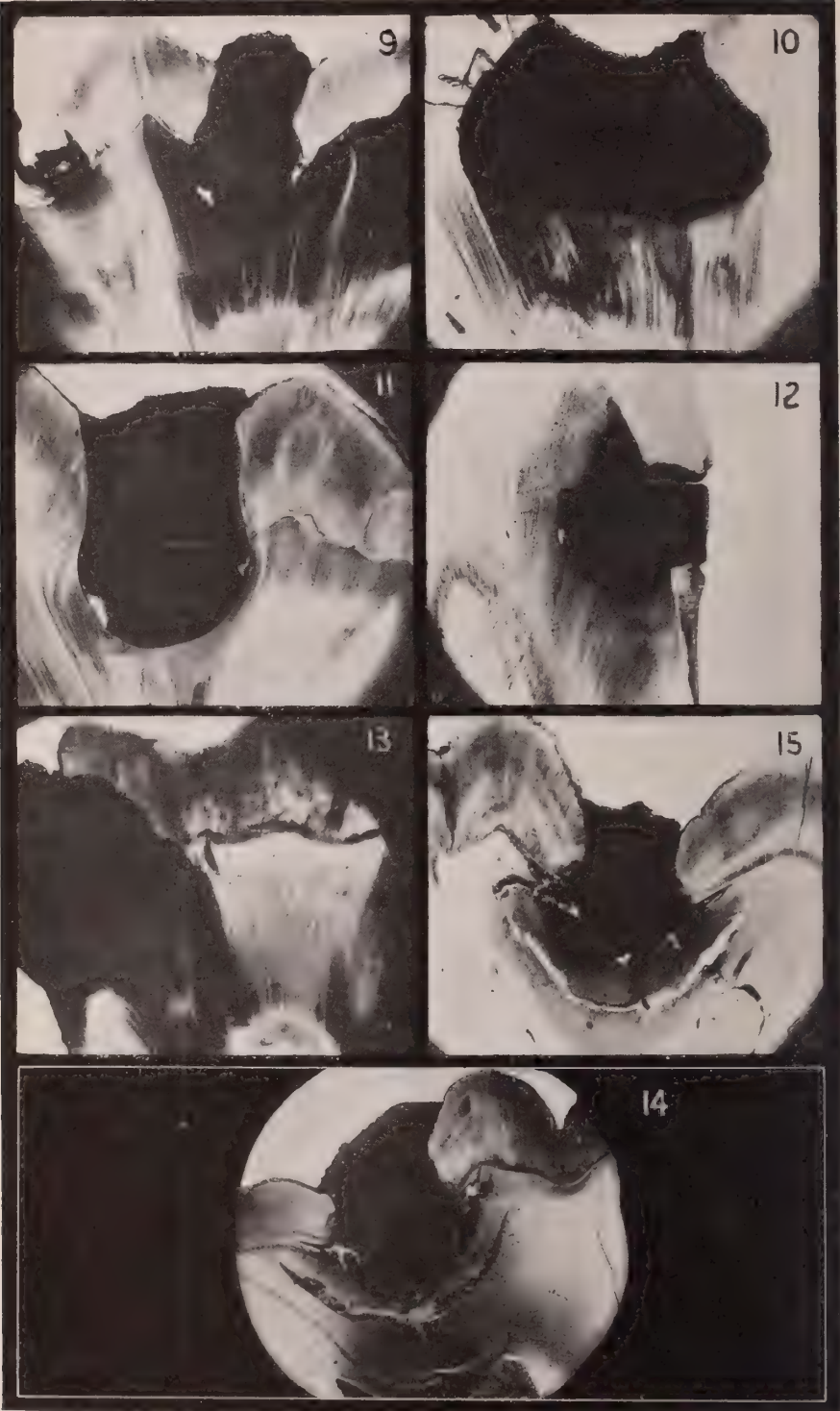
In Fig. 11 we have a cavity of the same class as Fig. 10, but which has been much more carefully prepared. The filling is of amalgam in the upper half and gutta-percha in the lower. It is plain that the enamel is in excellent condition, and the dentine shows very little discoloration, although there is a slight but remarkable streaking in the tubules opposite two points in the gutta-percha where there is poor adaptation.

A very poor cavity preparation and incomplete adaptation of the filling material is seen in Fig. 12, in which we have an amalgam filling in an approximal cavity of an incisor. There is a marked decalcification of one enamel border and a crevice between it and the filling. The decalcification has come into it from the exterior and at the dento-enamel junction has spread out very wide laterally in the dentine beneath the enamel. It will be noticed that in repairing this filling it would likely be necessary to remove the whole incisal corner in order to eradicate all the caries. The original infection seems to be quiescent, although the filling is not perfectly adapted to the floor of the cavity.

A larger filling of this same class is seen in Fig. 13. In this case we have an exceedingly poor cavity preparation, in that a large portion of the enamel wall on the occlusal rests directly upon the filling, and for this reason a portion of it has broken away. In the base of the filling, where the main action of primary caries lay, there is a very heavy discoloration which runs toward the pulp along the line of the affected dentinal tubules. Its action is clearly limited by the deposition of secondary dentine in the pulp. There is little involvement of the dento-enamel junction, the action being almost entirely in the base of the cavity.

Figs. 14 and 15 are of two cases very much alike, small occlusal amalgam fillings in molars, in each of which there are unmistakable signs of secondary caries beneath the fillings. The enamel in Fig. 14 is nearly perfect all along the borders and in Fig. 15 there is but little decalcification seen, but in the dentine of both there is a very extensive softening, which extends out laterally beneath the enamel a considerable distance and inward almost to the pulp chamber. The wide cracks in the dentine are likely due to the shrinkage of the decalcified portion while drying. In neither of these is there any apparent access from the exterior, and very likely the large secondary changes beneath the filling are due to the remains of caries left in the base of the cavity.

In looking over a group of sections of this kind, a number of questions



Figs. 9, 10, 11, 12, 13, 14 and 15.

come to our minds as—How much is it necessary to excavate the various cavities we fill in order to prevent recurrence of caries?—Is it necessary to sterilize the walls of our cavities before filling?—What filling is the most likely to inhibit the action of infection present?—etc. These are broad questions and are not possible of ultimate answer. In a general way, we may say of the first that a cavity must be extended until all the softened dentine and enamel is removed, and that in so doing we remove the bulk of the infection in a manner similar to curetting. Decalcification precedes the advance of bacteria and few penetrate into the solid dentine. The portions of the cavity which should receive the most attention in this regard are the dento-enamel junctions and the area of the dentine along which the main body of the caries advanced toward the pulp. Externally the enamel borders must be carried to a position where they may be kept clean.

As to the sterilization of the cavity, when prepared, inasmuch as we are attempting the removal of an infectious material, it seems reasonable that the wall of the cavity be treated with some agent which will kill the bacteria upon the surface, but the practice of placing much dependence upon the penetration of any agent into a mass of infected dentine which has been left in the cavity has little evidence to show that it is efficient.

The filling which is most likely to inhibit caries is undoubtedly copper-amalgam, but as it is so far discounted by its other poor qualities, we cannot take it into account. The next then in order of the preservative fillings is the permanent cemented fillings—the inlay principle in all its forms.

DISCUSSION.

Dr. C. J. Lyons, Jackson: I secured a copy of this paper only a few hours before leaving Detroit, and have not had time to more than glance it over. I am sorry that I did not have time to prepare a thorough discussion of this paper, because I consider it a very valuable and interesting one, one which we can all profit by.

In my judgment, faulty cavity preparation is more responsible for recurrent caries than the filling material itself. If you have followed carefully the pictures on the screen, you will find that a large majority of the cavities have been prepared very carelessly and that the fillings show that they have been inserted carelessly. I wish to compliment the essayist on the fact that he has shown us the necessity for careful cavity preparation; it shows the necessity for "extension for prevention;" that we must follow out all the fissures to the very end. Several of these plates have shown us that recurrent caries has taken place just in the fissures where they were not followed out thoroughly. It shows that we must cut out all of the overhanging walls and enlarge the cavity so that we can remove all of the primary decay from the vulnerable point at the dento-enamel junction. In many of these cases that have just been shown, all of the primary decay has not been removed, and it has gone on and undermined the fi

The essayist gives as one reason for recurrent caries the lack of contour and final finish. Now I grant, whether your filling material is gold, amalgam, cement or gutta percha, if you do not restore the normal contour of that tooth and place that filling in as polished a condition as the normal, it is sure, sooner or later,

that recurrent caries is going to take place, because if the filling is left roughened it leaves a chance for food deposits to lodge and a breeding place for bacteria. I do not think, under ordinary conditions, we can make a fair comparison between gold and amalgam as a filling material, because we do not use the same precautions in inserting these materials. I do not think there is a man here in this room that uses the same precaution in his cavity preparation, in his contour, and in his final finishing with his amalgams that he does with gold. In the first place, the ordinary amalgam filling is put in without any rubber dam; it is not isolated from the secretions of the mouth; the cavity is frequently not thoroughly desiccated, and by not thoroughly drying it out we are not making that cavity sterile. Then, with the average amalgam filling we do not attempt to restore the contour as we do in placing in the gold filling. We do not get separation usually so that we can contour that amalgam filling normally, and I think, with the average amalgam filling we do not attempt to polish it as with the gold filling. So, for these reasons, I do not think that we can make a fair comparison between these filling materials. I think in some mouths and in some teeth, it is doubtful if gold or amalgam either, will make an absolutely tight filling, but I do believe that the cemented fillings or inlays will accomplish this. I think that the protected cement filling is the greatest tooth preserver that we have. This was proven to me a short time ago in a case that I had where I was called upon to re-set a shell crown. In the first place, there was only a small cavity in the tooth. This crown had been on eleven years; the decay in the cavity had not been thoroughly removed in the first place, and the crown, or the cement under the crown, had protected that tooth from further decay. The tooth was in such a condition that I persuaded the patient to have a gold filling, instead of resetting the crown, which had then been on eleven years. So I filled the tooth, instead of crowning it, and I presume the cavity was not any larger when I filled it than it was eleven years before, and it had been protected all this time by the cement. That leads me to think that the protected cement fillings, or the inlays, are the best tooth preservers that we have. I think one of the reasons that the inlay is such a good tooth preserver is the fact that we always aim to get normal contour and surface finish. We have to have a surface finish in the porcelain inlays especially.

One point the essayist has brought out very clearly, the necessity for close adaptation of our material to the cavity walls. The pictures showing the gutta percha under the amalgam, where it showed that it had not been thoroughly contoured to the cavity walls, showed that that was the only place where recurrent caries had taken place. I should have liked it very much if the essayist could have had a few cases to have shown us where he had taken the plates, from either gold or porcelain inlays, to see what the conditions were around those fillings.

Dr. M. L. Ward, Ann Arbor: It gives me a good deal of pleasure to discuss this paper, involving as much work as it does and taken care of in the able way in which Dr. Bunting has taken care of it. It involves the whole question of the antiseptic properties of filling materials, and the whole question of how and to what extent can you sterilize cavities—both of which are somewhat open questions so far as the literature is concerned.

There probably is nothing that has a greater weight than the work of Miller upon the antiseptic properties of filling materials, and yet within the last year old work has been thoroughly upset, so far as definite conclusions are to be drawn, upon the antiseptic properties of tin, amalgam, or gold foil. Some time ago he stated that tin was in no way to be regarded as antiseptic. Now, that may all be true, that tin is not antiseptic. We know that many of the salts of tin are not antiseptic, but when you put them into a mouth, the contents of the saliva being unknown, and only a few

months ago it was proven that we do not know whether it is acid or alkaline. We do not know whether or not these new salts could not turn from latent to potent salts when they are put in this mouth. In other words, if tin is not antiseptic in one condition, does it remain in that condition all the time, or does it, in a mouth with a changing solution, the contents of which are unknown, change to something else? We know, from clinical experience, that tin saves the teeth; we also know that it is easily adapted, but we do not know that the salts are not antiseptic for the reason that until the last few months the work, just recently published, of Kirk, Head, Hinkins and Akire, proving that the litmus test was not reliable, that we do not know much about the saliva today. The same thing is true with the cements. The theory that cements kill pulps from the presence of arsenic was just downed by Ames, when he proved that 7% of arsenic inaugurated with crystals of zinc would kill pulps, but he says that he cannot say that this latent arsenide does not become a potent arsenide when you put it in the pulp; so we cannot say for the present that either of these materials is or is not antiseptic. The same thing is true, so far as the literature is concerned, on the subject of soft gold foil. Dr. Miller has stated that it is slightly antiseptic, but that it is not enough so to be of any great value in preserving from further caries. Now, we do know that pretty nearly all the chlorides are slightly antiseptic. I have made a few estimates within the last few days upon a few sheets of soft gold-foil, and I find that the amount of ammonium salts upon them is considerable; to what extent this inhibits caries I cannot say; to what extent it becomes some other salt in the presence of saliva, or the open ends of the tubuli in under teeth I cannot say, but I can say this, that from the work Dr. Bunting has done he has shown us pretty conclusively that the antiseptic properties of filling materials have very little to do with this recurrent caries for this reason, that the ones which have the most caries are alloys, though he does not show that they are copper alloys. The ones having fewest caries are made from soft foil, and from tin. Now, it looks to me like this: that the ones with the greatest amount of caries are the ones from the material which we know we cannot handle successfully in hardly any case. We simply cannot handle alloy and make a filling which will not stand nor leak like we can with any of the other filling materials; we cannot handle it and make a filling which is anything like as tight as one from soft gold foil, tin foil or cement. As to the antiseptic properties of the alloys: It has been proven, beyond any doubt, that the green basic carbonate which forms upon copper alloy is decidedly antiseptic and that it forms itself in the presence of moisture and very little heat. Further than the copper alloys, there is little or no antiseptic properties from them. Anything containing as high as eight or ten per cent. copper which turns black enough or green enough, forming enough oxide and basic carbonate becomes antiseptic.

There is one thing which Dr. Bunting spoke of which I have been unable to figure out, and that was why cement fillings should not be good preventives to recurrent caries. I do believe that the cement filling protects absolutely the tooth from caries until it begins to decompose. We know cement is more or less short-lived, of course, but I believe during the life of the cement filling a tooth is protected, and that the cements we now have are quite impervious, and that they are not only impervious but adhere to the walls of the cavity and are the tightest things we have, whether protected or not. We know we have decomposition more readily in some mouths, and cement decomposes frequently at the cervical margin because of the frequency of lactic acid in that place. Cement fillings decompose also in some hidden place, where fermentation takes place and lactic acid gets at them, but I have been unable to observe that there were recurrent caries under cement fillings until this cement began to decompose. Now, whether or not cements are antiseptic, I cannot say. I can say that cement in itself is as inert as sand, if dry, but in the presence of moisture it decomposes, resulting mostly in phosphoric acid solution. Under some conditions some surfaces of cement fillings, when moist, may become antiseptic, but not the under surface, which, according to Ames, does not

become antiseptic, for the reason that this cement is so strong that the moisture is immediately taken up from the open ends of the tubuli into the body of the cement filling. The hydraulic cement has a great affinity for water and immediately takes up what is in the open ends of the tubuli to make itself what it ought to be, the natural acid, the ortho-phosphoric, and I do not think it can become moist enough to decompose sufficiently to soften dentine or cause recurrent caries. I feel pretty certain about the cement. I do not believe that the cements are likely to invite many recurrent caries, but so far as the other filling materials are concerned, we are as far from definite conclusions as we have been for a good many years.

One thing the essayist spoke of which Dr. Miller had called attention to, was the cause of recurrent caries from failure of extension. I think there is no one thing which will teach a greater lesson on extension than the introduction of a gold inlay, for the reason that our cavities have to be opened to insert them. In the kind of recurrent caries shown here, in the kind underneath our fillings, it looks as though the infection had gone down into the tubuli beyond the place where disinfectants would reach. We have no evidence from these charts that these cavities have been disinfected, or that this disinfection was effective, consequently the lesson we are to draw is to do more excavation at the bottom of the cavity, and a great deal more effective disinfection, in completely excavated cavities.

Dr. E. T. Loeffler, Ann Arbor: I am sure we are all grateful for the efforts the gentlemen have made in our behalf tonight in giving us such excellent papers. It shows that a great deal of thought has been put upon the subject. I am sure everything has been brought out in a way that none of us would be able to improve upon. Most every phase has been touched upon. It seems to me that we ought to be stimulated to make some effort, each one of us, in order to advance this work, and keep it up, find out some little thing, if it is only one phase of it. Every one of the speakers tonight has touched upon some point in both papers with which to give us a stimulus in doing work of this kind. It is not the work of one, or two, or six men to carry on; it should interest all of us; we should all get interested in the work and do, at least, a little portion of it. In regard to the work along the line of disinfectants and antiseptics, I would like at this time to say something in regard to the difference in the meaning between these terms, and how they ought to be used, but it is late and I shall not do it. Again, I wish in my own behalf to thank the writers for the excellent work they have done in entertaining us this evening.

Dr. N. S. Hoff, Ann Arbor: I cannot refrain from expressing my gratification to Dr. Bunting for the excellent presentation he has made to us this evening. It certainly ought to be very helpful in suggesting at least more earnest endeavor on our part to prepare our filling materials with more care. I could not help but wish, while the slides were being presented to us, that more sections could have been made in a transverse direction, so that we might determine, if possible, whether or not there might have been some external opening or opportunity for the ingress of decalcifying influences. It has been my observation that under oxyphosphate cement fillings we often have a softening of the dentine, and it has never occurred to me that this was due to imperfect manipulation prior to the insertion of the filling. I have always supposed that recurrent caries were due to reinfection from without, from some external influence or disintegration of the filling material. I have observed in this connection, also, that in gold fillings or in tin fillings we do not have this same softening of the dentine beneath the filling; especially with tin fillings we are likely to have hardening of the dentine rather than softening. In amalgam fillings we have this softening of the dentine under the filling similar to that in the cement filling but not, in my judgment, to the same extent. This observation of mine, from clinical experience, leads me to suspect that there must be some external influences to account for this recurrent caries

beneath these fillings. As I looked at the pictures, as they were passed through the lantern this evening, it seemed to me that it was not possible that all of this amount or extent of caries could have occurred unless there had been an opportunity for the ingress of some external cause, which would invite recurrence. I should be very glad if Dr. Bunting would continue this research and make in the future enough transverse sections to determine the condition of the enamel and the dentine about the fillings.

As to the influence of the materials themselves, as to whether they are antiseptic or not, and whether they have any restraining influence or not, I do not believe that could have anything to do with the conditions as we find them, because under the disintegrating influences of cements, for instance, there is nothing liberated that would have a sterilizing, or even a restraining or inhibiting influence, not even an antiseptic influence, and especially is this true of amalgam. In the latter we have only the salts of the metals formed; these would be soluble and readily dissolved out and would have no permanent restraining influence, consequently they would not disinfect or sterilize the conditions, and would permit the recurrent caries. They certainly could not have the influences which Dr. Black and men who have followed his theory as to the cause of dental caries claim; we could not have the development of the mucoid or gelatinous plaques of micro-organisms which cause ordinary caries on the surface, and it does not seem to me reasonable that we could have the anerobic micro-organisms develop to such an extent as to cause the amount of caries beneath the fillings shown in the slides. Whether or not, had Dr. Bunting cut more of these slides and found a lesser amount of caries, he would have suggested a different conclusion, I cannot say; but it would require a large number of slides to give us data from which to arrive at proper conclusions as to what causes this recurrent caries, whether defective filling materials or instrumentation from the start, or whether it was caused by subsequent infection due to faulty conditions of the material used, such as shrinkage of the amalgam or dissolution of the cement under the influence of saliva in the mouth. I do not myself believe that this could account for it. Just what this influence is, as I said, it seems to me can be determined only after a much larger investigation or research on this subject, and I trust all of you will encourage Dr. Bunting to go on with this research, because it seems to me that it is an extremely valuable one and will ultimately lead to results of significance to us in determining what is the cause of the recurrent caries under our filling material.

Dr. Geo. Zederbaum, Charlotte: The discussion being limited to two minutes, I will endeavor to say what I have in my mind in that period of time, and hope some one will stop me if I transgress over the allotted time. I paid minutest attention to the paper and illustrations just given us, and congratulate Dr. Bunting for his excellent scientific work along the line he has taken up. I was much pleased to hear him, as well as the other practitioners, who so ably discussed the subject in hand. As well as Dr. Loeffler, I realize that this is a very important and a very extensive subject to deal with, and right here I wish to emphasize what had been already said by Dr. Bethel and others relative to the scientific part of our profession. This must not be neglected by any means. While I will admit that the exhibition and the discussion of subjects technical in nature are of great consequence, I will place an emphasis on the scientific, the literary, the knowledge broadening portion of our profession which must not be forgotten, for, after all, it is upon just such knowledge that the success of our technical, manual work, if you please, depends. Who knows but what Dr. Bunting's scientific research of today may not bring something hidden from light and may not serve to revolutionize the handling of different filling materials or may not show the necessity for the preparation of cavities different from the present *modus operandi*? I wish to ask Dr. Bunting a question or two which are uppermost in my mind, and I know that he will answer them if he can. I would like to know whether he has noticed any difference

between the sections obtained from teeth that were pulpless and those from living teeth. While I realize that the recurrent caries under a filling of a pulpless tooth may, in themselves, not be of any great import, yet, for the sake of comparison, such a comparative examination may not be amiss. Another question, and over which I have pondered a good deal, is this: Why is it that after a thorough preparation of a cavity, including of course of the total removal as far as possible to discern it, of all decay, not forgetting the cone-shaped spot to which Dr. Bunting laid much stress, say in an occlusal cavity of a molar, and which cavity, owing to its extreme sensitiveness, was lined with an oxy-phosphate cement and finished over with amalgam, and all this done under strictest antiseptic conditions, rubber dam and all, why is it, I ask, that while everything seems perfectly quiet for a short time, say for a few days, the pulpitis sets in and no relief can be obtained until the whole filling is removed and the tooth devitalized after all? I am often in doubt whether a cement lining in a deep-seated cavity is of any great value after all, and I never can assure my patients that that filled tooth with a protective lining would be absolutely normal for time to come.

Dr. Bunting (closing the discussion): I want to say that both questions of Dr. Zederbaum are well put and well taken, but I can answer neither of them at all creditably. In the first place, as to the difference in appearance of the dentine beneath fillings which are placed in dead teeth against those placed in live teeth,—I have a few cases in which the pulps have been filled with gutta percha and the amalgam has been extended under the pulp chamber; the fillings perfectly protected the dentine and were in good condition. Of course, if the pulp is dead, we will usually find little of the transparency shown underneath the filling, because that has to be formed during the life of the pulp and would not be found in dead teeth. Relative to pulpitis found underneath fillings, or combination fillings, I don't know what to say. Had not Dr. Ward made such an emphatic statement as to the absence of any liberation of acids on the under side of the cement filling before Dr. Zederbaum asked this question, I would have answered by saying that there was a liberation of acid there due to the presence of moisture in the tubules, which would combine with the cement and liberate free acid, which acid would be irritant to the pulp.

Dr. Zederbaum: The point was that Dr. Ames claims arsenical poisoning is impossible in these cases, but I believe that there is something in it after all and that the arsenical poisoning causes the trouble.

Dr. Ward: He attributes it to fillings which had been made of softly-mixed cement containing excessive liquids, which irritates the pulp.

Dr. Bunting: There are a great many things that need to be worked out, and I should like very much to do further work along this line, but the trouble is that to do work of this kind we must have material, and I have used up all the material I have and do not know where I can get more. I should be very grateful if you who are here tonight would remember me in the time to come by sending the filled teeth you extract. Collect and send them to me, putting them in an antiseptic solution—if you put them in water there is apt to be a fermentation, which will change the filling or the tooth, but a mild antiseptic solution will keep these nicely. I will be grateful to you for them, and will make the best use I can of them.

One word in regard to cements. I spoke emphatically about the failure of cement fillings to protect teeth from decay. How long is it before our average cement filling gets flattened, loses the contact point and allows formation of the "V" shaped space at the gingiva where the recurrent caries will undermine? Those are the things which I deplore, and I cannot put any dependence on the all cement filling. The combined cement filling is the best thing of which I know.

PORCELAIN AND GOLD INLAYS

By A. W. Starbuck, D. D. S., Denver, Col.

Superintendent of Infirmary, Colorado College of Dental Surgery

(Continued from page 175, March Summary.)

The same scheme of building colors, as illustrated for gingival cavities, is used for simple approximal cavities.

In Fig. 46, you will notice the manner of building up the foundation porcelain. As before, the margins are kept entirely free, thus preventing a change in the matrix in this region and enabling the operator to re-burnish if he feels in doubt of his adaptation. Fig. 47 shows the restoration of the dentine. If the cavity is large and the gingival margin extends to the neck of the tooth, this porcelain is built quite to the surface, receding

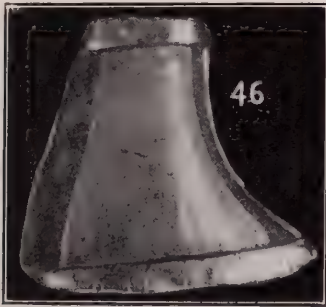


Fig. 46.

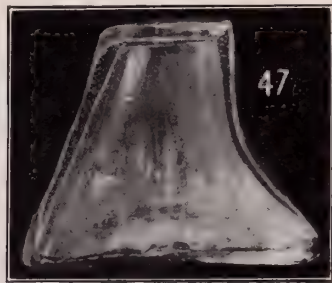


Fig. 47.

as it approaches the incisal margin. It will be noticed that both the labial and the lingual surfaces are trimmed away about equally. This was done simply for the pleasing effect if examined on the lingual. However, the writer often thinks it prevents, to a large extent, the change in the inlay, from shadows. It may be necessary to apply this dentine portion the second time to compensate for the shrinkage. On this the enamel porcelain is built, bringing it *just flush* with the margins. This will necessitate a second baking, but it is difficult to judge shrinkage and it also gives one an opportunity of making a slight change in the colors if his first selection was not correct.

In cavities of the third class, the foundation body is carried only to within about a millimeter and one-half of the incisal edge, Fig. 48. The dentine porcelain may stop about the same point or extend entirely to the cutting edge, depending entirely upon the labio-lingual diameter of the tooth. As a rule we will find it necessary to extend the dentine quite to the surface at the gingival, Fig. 49, as we select the dentine where it is modified to a certain extent by the enamel and do not get the true dentine color.

In all cases be particular to restore the contour of the dentine as it originally was in the tooth, Fig. 50. The enamel is contoured exactly as

you wish the finished inlay and just flush with the margins. Never guess at an excess which will compensate for the shrinkage, as there is no fixed rule regarding the amount of shrinkage and the less we use a stone in finishing our inlay the better the result.

Before taking up the next step, it may be well to mention a few precautions, helps, etc., in the working of the porcelain. Never lay the matrix down, but grasp it in a pair of pliers and lay the pliers so that the inlay will stand out from the edge of the table.

Distilled water is preferable to alcohol for mixing all porcelains, as it evaporates more slowly allowing ample time for carving the porcelain. Do not try to work the porcelain too damp, as it is impossible to build contours, and the porcelain ingredients have a tendency to separate, thus producing a weak product.



Fig. 48.



Fig. 49.



Fig. 50.

It is seldom necessary to mix colors. Get shades by laying one color over another. Never attempt to build in the enamel color without having first baked the dentine color to a low glaze, as the colors will blend and produce an entirely different result. In removing an excess of moisture, the best absorbent is the dry porcelain powder which is being used at the time. Touch the inlay to the dry powder, then brush away the adhering particles with a soft dry camel's hair brush. Never use a damp brush to remove the excess of porcelain on the margins of the matrix, it simply makes a thinner layer of the porcelain and makes it difficult to remove. A better way is to loosen the particles of the body with the point of the carving instrument and brush away with a dry brush. Remember that low fusing porcelains are more nearly opaque than the high fusing, consequently it is necessary to carry the dentine color to the surface of the inlay. Otherwise the enamel color will cut it out completely.

Before baking, always examine the under or cavity surface of the matrix to make sure there has no porcelain run over on that side. If there

has, it should be removed before placing in the furnace, as it will be impossible to remove the matrix and will prevent the inlay going to place. Be sure the porcelain is entirely dry before placing in the hot furnace. Do not bake too rapidly. A much higher grade of porcelain will be produced by starting with a cool furnace and gradually raising the temperature, using plenty of time to allow the heat to penetrate the body. Placing in a hot furnace or raising the temperature too rapidly will cause a crust to form on the surface and the inner part will be porous.

Do not apply the body in the center of the inlay and expect it to flow to the margins by jarring. It may seem to do this, but at the final bake a row of bubbles will appear along the margins as a result of this. It is better to build all over the surface to a slight excess then trim down to the desired contour.

REMOVING THE MATRIX.

After the inlay has been properly baked, the next step is to remove the matrix. This should be carefully done by grasping the free edge of the platinum in a pair of pliers and peeling towards the center. This may be more easily accomplished by first dipping the inlay in water.

After removing the matrix the cavity surface of the inlay must be roughened to permit the cement to properly adhere. This may best be accomplished by imbedding the inlay in wax, leaving only the cavity surface exposed and etch with hydrofluoric acid. It should be left in the acid from two to five minutes, depending upon the porcelain and the strength of the acid. This is very important and should not be neglected. A simple gingival inlay with four antagonizing walls will not hold if it is not properly roughened.

The acid should be thoroughly removed by washing, using a fine stiff brush.

SETTING THE INLAY.

The so-called "Cement Problem" has confronted the porcelain worker for years. A great deal of the change in color, on cementing an inlay to place, is due to a too thick layer of cement between the inlay and the cavity. This may be due to lack of adaptation of the inlay, using cement so thick that the inlay fails to go to place, or having a cement that is so coarsely ground that it will not permit the inlay going to place. The color of the cement has little to do with it, a light cement being nearly as bad as a dark under similar circumstances. Thin layers of cement will transmit light; therefore, if we expect our inlays to retain their color after setting, we must have our adaptation so perfect that the layer of cement will be thin enough to transmit light.

No cement should be used except one which is especially ground for inlay purposes. The writer prefers a cement pearl gray in color. This should be carefully mixed to a creamy consistency, being careful that there

is sufficient powder to take up all the free acid. This should be spread over the dry cavity with an explorer, using as nearly as possible the exact amount necessary. Force the inlay to place and keep under pressure until the cement sets. If the work has been properly done there should be little or no grinding to do after the inlay sets.

(To be continued.)

ALVEOLAR PYORRHEA AND ITS TREATMENT *

By D. D. Smith, D. D. S., M. D., Philadelphia, Pa.

ALVEOLAR Pyorrhea, more commonly called pyorrhea alveolaris, "Riggs' disease," would be more fittingly, if not more accurately named Oral or Mouth Pyorrhea; for, whilst it is an inflammation eventuating in pus discharge about the roots of teeth, the pathological condition is not confined to the alveolus nor to the alveolar tissue. Oral pyorrhea, as we shall therefore designate it, may be defined as a pathological state of the mouth in which some of the teeth, through necrosis and absorption of their supporting structures, become loosened and ultimately fall out, or due to the progressing inflammatory action and persistent pus discharge the teeth may require extraction. It is a condition seldom found in connection with so-called "soft teeth;" it is rather associated with teeth that are practically immune to decay.

The etiology of this infection, so long a matter of doubt, discussion and speculation, if we would uncover its mysteries, must be studied as an inflammation centered in the structures which support the teeth, for it is an inflammation having no manifestation, no expression other than what is apparent in the tissues named. This is abundantly shown in the fact that extraction of pyorrhætic teeth, in every instance, results in the disappearance of all traces of the pyorrhea (pus discharge). The pyorrhæal condition is excited and maintained by some local irritant that has its seat in or about the roots of teeth: an irritant that is clearly and unmistakably differentiated from a constitutional infection. In its more direct activity, the inflammation of oral pyorrhea is centered in the alveolar process, but the cementum and pericementum, as well as the gum structure about the affected parts, are also involved, to a greater or less degree. Its destructive effects are seen specially in the wasting of alveolar and gum tissue, and in the disturbance and loosening of the teeth. The destruction of alveolar tissue about the root is by no means regular nor uniform. The inflammation causing the necrosis may attack both the external and internal plates of the process, or it may cause depressions, generally called "pockets," in the alveolar process beside the roots: pyorrhætic pockets in the alveolus retain infectious matter, increase the virulence of the inflammation, enhance the formation of pus and tend to the more rapid loosening of the teeth.

*Read before the Northeastern Dental Society at Hartford, Conn., October 22, 1908.

Among the more prominent local sequences of oral pyorrhea will be found mouth infection, pain, foeter of the breath, disablement and final loss of the teeth. Serious as are the local effects, the systemic effects are frequently more serious.

Oral pyorrhea is neither hereditary nor contagious, neither is it communicable from one mouth to another, as by inoculation from infected instruments; but due to the fact that pus and other effete products are disengaged in the mouth, its continuance is a grave menace to the general health. Septic exudates of the inflammation are perpetually present and resorption of these toxine products is a constant danger: the conditions favor, almost compel, their transference into the circulation. Septic matter may be absorbed through the open vessels of inflamed, broken, or wounded mucous membrane, or it may be taken into the circulation by the stomach or by the intestines. The breath also, constantly loaded with pyorrhæic effluvia, may become a medium for conveying bacterial and other septic matter directly to the lungs.

THE REAL CAUSE OF PYORRHEA.

The real cause of oral pyorrhea is a neglected state of the secretions, exudates and debris in the human mouth. There are no systemic causes for its development other than what may predispose to any disease. It is a local inflammation caused by states and conditions of the natural teeth, and by infection retained upon their exposed surfaces.

The infection develops from mouth fluids—especially the nocturnal mucus—from the breath, from food-remains, stagnation and decomposition of oral products and from numberless states of the mouth and teeth which engender uncleanness. Retention of infection upon and about the teeth to the point of irritation and inflammation is promoted and maintained wholly by lack of intelligent care of the mouth in general and the dental organs in particular. It is fostered by ignorance, by hindrances and obstacles, as the size and shape of the teeth, their irregular or abnormal placement in the dental arches, and by lack of proper implements with which to acquire and maintain true cleanliness.

The prevalent teaching that pyorrhea is caused by “uric acid” in the blood, giving rise to “gout in the teeth,” that it is due to “faulty metabolism,” or that it is a result of any constitutional infection or disease whatever, is teaching out of harmony with all experience and all pathological expressions of the disorder; all such teachings should be at once abandoned. While uric acid may occasionally be found in connection with oral pyorrhea, it is not in the remotest degree the cause of it. Probably not five per cent. of mouth pyorrhea cases have any association with uric acid, or with rheumatism or rheumatic gout.

Systemic disease never develops oral pyorrhea, but conversely oral pyorrhea may and does develop and sustain grave disorders that have not

hitherto been suspected in this connection; for of necessity, much of the resultant septic matter finds its way into the digestive tract because the inflammation is in the mouth.

The pyogenic products increase with the progress of the pyorrheatic inflammation; and as the alveolar and gum tissues become more and more involved, septic matter is increasingly disengaged. The inevitable result is a slow pyemic poisoning and other states of systemic infection. In one marked case of long standing, virulent pyorrhea which came under my treatment, sugar having previously appeared in the urine, the attending physician had kept the patient, a man about fifty-seven, under constitutional treatment and on the usual diabetic diet for some months with no appreciable results. Successful treatment of the mouth pyorrhea, with no further constitutional medication, resulted in the elimination of the sugar in five months, and the patient was pronounced by his physician relieved, if not cured, of a chronic nephritis. I have one other case in practice equally noteworthy. (Considering the number of grave diseases with etiology unknown, ought not this prolific source of general infection, pyorrhea in the human mouth, to be recognized and more carefully studied?)

Pyorrheatic infection is not, as some contend it is, an occult general "faulty metabolism," due to previously lowered systemic vitality; it is not "uric acid," neither some "specific" poison in the circulation. It does not reside in the alveolus, nor in the tissues connected with the alveolus. If it were in any of these, the inflammation, the pus discharge, and the necrosis would continue after removal of the tooth or teeth; whereas following the extraction of a pyorrheatic tooth there is immediate resumption of normal physiological function both in the alveolus and adjacent parts; the inflammation at once subsides, the pus ceases and the wound heals; and this is generally followed by a notable improvement in metabolic changes affecting the general health.

The loss of any tooth or teeth about which pyorrhea has occurred will in every instance cure the pyorrheal condition without medication or constitutional treatment; and further, the pyorrhea will never recur at the location of the extraction. The meaning of this fact has not, I believe, been sufficiently emphasized.

All clinical observation and all true experience point with unerring precision to the tooth-root itself, or some irritating infection at the cervix of the tooth as the etiological factor causing and maintaining the pyorrheal inflammation; therefore, it may be stated with certainty that oral pyorrhea is a condition as wholly preventable as it is certainly curable. The treatment for the mouth and teeth heretofore promulgated and enforced in practice by the author of this paper, has fully demonstrated the correctness and stability of this proposition. It has also demonstrated that relief and cure of oral pyorrhea comes through local treatment, and that alone. The lack of success in all constitutional medication for pyorrhea is too well

known to need restatement here. In no instance has prescription treatment worked out in practice.

All dietary as well as all constitutional medication has proven utterly impotent in the treatment of this condition, and thus it will ever be.

It is too absurd even to suggest that any agent working through the circulation as a nutrient or medicament can influence the removal of a local irritant that is adherent to externals of the roots of teeth. Even those who claim that it may be necessary to "first remove a constitutional vice" to prepare the case for local treatment, are too cautious to point out any line of constitutional treatment or even suggest any particular constitutional remedy.

It should be noted that not all conditions of alveolar necrotic absorption due to pyorrhea are susceptible to restoration. To cure pyorrhea and save the teeth, treatment must be instituted before the inflammatory process has progressed to a condition denoting hopeless destruction of the supporting alveolar tissue. When teeth have lost their bone support, there can be no permanent tightening, neither restoration. In all such cases the teeth are inevitably destined to extraction or complete exfoliation.

The permanent tightening of teeth that have been loosened from pyorrhea is wholly dependent on the amount of support remaining in the alveolus and the life in the cementum. If the destruction of the pericementum, caused by the necrotic wasting of the alveolus, has not progressed too far, the tissues about the loosening teeth may, by intelligent treatment, be made to close in upon the roots and thus, to a greater or less degree, they will tighten in their sockets. Terminal alveolar tissue, however, once necrosed and wasted can never be restored; this tissue cannot be made to increase or build itself, neither can it be made to build about the roots of teeth; surface osseous tissue, once absorbed, will not, cannot, be reproduced. Therefore, the cure of oral pyorrhea without extraction is not necessarily followed by the permanent and satisfactory tightening of all teeth under all conditions. (It should be understood that there is in this no reference to so-called "Splinting" or any other manner of temporarily tightening teeth by mechanical means.)

The statement found in "Faulty Metabolism a Predisposing Cause in Oral Pathology," that there can be no disease after extraction because the alveolar process is no longer present, exhibits lamentable, if not inexcusable ignorance respecting the anatomical and physiological relations of the mouth and jaws.

The true explanation is this: Tissue *necrosis* ceases when the pyorrheatic tooth is extracted for the reason that the cause of the necrosis is removed when the pyorrheatic tooth is removed and the pathological condition, caused and sustained by the presence of the tooth, is at once succeeded by alveolar absorption.

But alveolar *absorption* is a perfectly normal and physiological process. It follows every case of tooth extraction, and continues until the bony

process which was thrown out to sustain the teeth, is entirely removed. This explanation, coupled with the fact that an edentulous mouth never yet developed pyorrhea, and the further fact that a pyorrheal condition cannot be maintained in a mouth or any part of a mouth devoid of teeth, furnishes the most incontestable proof that *oral pyorrhea is of local and not systemic origin.*

The concern of dentistry should be to discern how to establish and maintain conditions of the mouth for the prevention or minimizing of the destruction that attends this infection.

Let me here again state: The exciting cause of alveolar pyorrhea is a positive septic local irritant upon, or in association with, the roots of teeth. This septic irritant may be a solid, a semi-solid, or it may be masses of mucilaginous debris gathered from mouth fluids. This constitutes the sole and only direct cause of mouth pyorrhea. As there are no constitutional factors causing its development, there can be no constitutional remedies for it. Foreign matter on the teeth, deposited, not by vital systemic agencies—a thing absolutely impossible—but deposited solely through adverse conditions and adverse agencies in the mouth, is removable alone, through delicate and skillful manipulation, at the hands of *common sense* dentistry.

To exhibit more distinctly the untenableness of endeavoring to present oral pyorrhea as a "constitutional disease," caused by uric acid in the circulation, let me ask, Why should uric acid—originating, no one knows where or how—be carried in the blood stream for a longer or shorter period and finally "deposit" on the roots of particular teeth in a given mouth? Through what force or agency does it deposit on or in the pericementum of *teeth* in preference to the more readily accessible periosteal bone tissues? And why should it single out for attack teeth and roots that are irregularly developed in the dental arches, or such as have short, misshapen roots and large bell-shaped crowns markedly constricted at the cervix, in preference to teeth that are accessible and readily cleansed? Why do we find the most intractable cases of mouth pyorrhea in association with hard teeth (?), teeth having roots practically denuded of cementum and consequently little vitality in the pericementum? (I do not refer here to cases of pocket pyorrhea, but to cases in which the recession is of such character as to preclude the possibility of any deposits of uric acid in the pericementum.) Why is it, if pyorrhea is of constitutional origin, that in so-called "serumal" pyorrhea the deposits are always in the pocket? Why are these serumal deposits often in considerable quantity, smooth and hard, and always firmly adherent to the root? Why are they so wholly unlike the ordinary salivary deposits found in the same mouth on the teeth near the mouths of the salivary ducts, especially the ducts of Steno and of the sublingual glands? How absurd the postulate that uric acid crystals would be deposited by the pericemental membrane through layer after layer of

serumal infection, when with the initiatory deposit this membrane is permanently separated from the cementum of the root, or more likely completely destroyed!

The expressions of oral pyorrhea enumerated, with others that might be mentioned, are shrouded as in midnight darkness to one who believes "pyorrhea alveolaris" to be a "constitutional disease"; but to one comprehending the inflammatory aspects and local environments of this trouble, they are as plain as the midday sun.

A CASE IN PRACTICE.

Here let me cite one of the worst cases of alveolar pyorrhea that I have ever treated. It was a case complicated with many loose pyorrhætic teeth and with an empyemic antrum, the cause of the latter being a pericemental abscess* on the root of an upper molar tooth. When the patient presented, with a greatly swollen face from the hands of a well-known dentist, he was suffering intensely, as he had suffered periodically for several years. The constitutional treatment of this case, between his doctor and his dentist, had extended over a period of about four years. I did not inquire whether or not he had "used alkalithia freely," as the proprietor of this nostrum directs, but it was quite evident that whatever constitutional agencies had been used the exciting cause had not been removed, neither had the disease been cured. I was informed that the dentist in charge had kept the patient, a man of fine physique, about fifty-four years of age, in the belief that he had "gout in the teeth," and that before the pyorrhea could be cured, he must be treated by his physician for rheumatism or gout,—diseases, by the way, of which he had never had a symptom. This constitutional pyorrhea theorist, among other silly things, had insisted on complete abstinence from roast beef, and had told the patient repeatedly that "he would be better when the strawberry season was over"; a prognostication probably from the same school of dentistry as those who recommend "the free employment of alkalithia." Inasmuch as the "strawberry" season is practically never over in Philadelphia, after two years of waiting the patient had about decided that he was doomed to perpetual suffering and the final loss of all his magnificent teeth.

There had been no intelligent effort made, either by the dentist or the physician, to remove the real cause of the trouble, hence the suffering.

It is now about four years since I instituted treatment for this patient. His mouth is today, and it has been for three years, in perfect health. The real cause of his four years' of suffering was "eliminated" at the first two or three sittings. His pyorrhea was cured and his empyemic antrum completely restored in about four months. "The marked improvement and cure" did not result from "keeping the urine alkaline to tighten the teeth

*See "Pericemental Abscess," an illustrated article read before the Philadelphia County Medical Society, Sept. 23, 1904, by the author; published in the Boston Medical and Surgical Journal, and the Cincinnati Lancet Clinic,

and remove the cause with alkalithia," nor any other constitutional "ithias."

The cure was effected through ridding the mouth of the real cause, which was a removable infection on the teeth. This was done by surgical instrumentation, as described in my article on "Alveolar Pyorrhea; Its Cause, Sequelae and Cure," a paper which, with several others equally important, the Dental Cosmos has steadily refused to publish.

After removal of the *real* cause, a complete cure was effected by instituting treatment which kept the toxic irritants from reforming on or about the teeth. In this manner the local inflammation and the necrosis were completely arrested, and normal nutrition speedily established; a result to be expected in every case.

I saw this patient for treatment in the beginning every day for about ten days; then every other day for a like period. From this time the periods of treatment were gradually lengthened until the improvement warranted only the regular monthly treatment, which has since been maintained. A marked change for the better was noted in less than a week, and the improvement steadily continued. No constitutional remedies whatever were given. He was *required* to abstain from all "uric acid eliminants" and all "gout" and "rheumatic" remedies, but he was allowed all the "roast beef," "strawberries" and other healthful foods that he desired. To show his appreciation of the present situation I transcribe a letter from him under date of September 1, 1906:

"DR. D. D. SMITH.

My Dear Doctor:—Pursuant to orders to notify you on September 1st of my request for an appointment, I am now reporting for duty accordingly. I have successfully encountered all the dangers attending the late "strawberry season" and am now taking my chances with cantaloupes and peaches. Have thus far escaped all injury through eating roast beef, with not even an indication of "constitutional vice" to trouble me. I therefore await your appointment with much pleasure and a grateful heart. Hoping you have had a restful vacation, and that you are in good health, I am

Sincerely and gratefully yours,

(Signed)

W. P. B."

This case, with perhaps a hundred others that I have treated with like results, furnishes the most substantial proof regarding the etiological factor, not in some cases, but in all cases of mouth pyorrhea. Imagine a dentist "keeping the urine alkaline to tighten the teeth and remove the cause," as one advertising M. D. puts it, in this or any other case! Matter of this kind may be "catchy" as an advertisement, but a moment's reflection will stamp it as among the most foolish things written in connection with proprietary medical advertising. And yet Dentistry often stands befogged and in wonderment before such advertisements, as it does before the false theories that have attained prominence in dental literature. Even

“The American Text Book of Operative Dentistry,” a book wholly for students, says: “Pyorrhea Alveolaris is a disease to be diagnosed by the dentist and treated by the physician.” Oral pyorrhea is an infection with no constitutional aspects. It is a trouble wholly amenable to dental, not medical, elimination. So far as I know, there is no pretension among medical practitioners to observation or experience in matters pertaining to the mouth and teeth. To the best of my knowledge, the clinical observation of this trouble is rarely within the purview of the physician. What can a physician, under present conditions, really know about the trouble called “Pyorrhea Alveolaris” from the standpoint of experience? There are many, even in the dental profession, who cannot with any certainty distinguish true oral pyorrhea. If this be true of dentists, what shall be said for the great body of the medical profession? I think the more experienced and better class of medical practitioners, with their present knowledge, would hesitate to express an opinion respecting this trouble, and much more would they hesitate to enter the field of dental literature as critics or instructors of the dental profession. It is a lamentable fact that we find practically nothing helpful, suggested either in dental or medical literature respecting the etiology, the diagnosis, or the treatment of mouth pyorrhea.

TREATMENT.

Many, if not all, even of the local applications, the so-called “mouth washes,” are but pleasantly flavored liquids which have little if any value in any diseased condition of the mouth, much less have they value in pyorrhea. Such as contain resinous gums, as myrrh, in alcoholic solution, are positively injurious; the solid matter contained in them being precipitated by contact with the saliva, this precipitation increases the accumulations upon the teeth and provokes further irritation.

Want of success in the treatment of oral pyorrhea is due to two causes; first, lack of thorough removal of the irritative calcarious and bacterial accumulations which gather upon and about the teeth, especially at the gum margins and on the roots, together with positive asepticization of the teeth themselves; secondly, to a lack of intelligent and persistent after treatment.

For the successful treatment of well-established oral pyorrhea all accumulations of whatever analysis, whether of the nature of calcarious solids, semi-solids, culture media or viscid fluids, should be carefully but completely removed from the teeth, with instruments adapted to this end: (It should here be emphasized that this and all subsequent operations should be so conducted as to entail the least possible injury to the *cemental tissue* of the roots.) Following this instrumentation, the whole crown surface of the teeth and such parts of the cervix and roots as may be exposed, should be *carefully polished*, and this most important operation should never be entrusted to a “dental nurse,” whatever that may imply, neither to dental engine equipments, nor to wheels, nor revolving polishers of any

kind; it should be done by a skilled operator, and with the use of *hand instruments alone*. As well might we expect satisfactory results from a machine-handled surgeon's knife, as that an unskilled assistant should obtain successful results in the Oral Prophylaxis treatment by using power polishers or other instruments operated by a dental engine. No oral operation requires greater judgment nor more delicate and intelligent hand control than the treatment of the teeth and mouth for pyorrhea.

The teeth *freed from foreign matter and polished*, the cure of oral pyorrhea and all other inflammatory conditions of the gums is wholly dependent on the second part, or after treatment, a matter hitherto, almost, if not entirely overlooked and disregarded.

In addition to the careful but absolute removal of the foreign matter from and about the teeth, there should be enforced such frequent and consistent change of environment for the mouth and teeth as will keep the latter positively free of all accumulating irritants. Scrupulous cleanliness for all teeth and all mouth conditions should henceforward be maintained through frequent attention on the part of the operator, together with the thorough and frequent cleansing by the patient.

Pyorrhea pockets and other difficult-of-access places should be frequently entered and forcibly cleansed, using for this purpose wood points, orange wood always to be preferred, charged with punice or common salt. Steel instruments are to be used for incrustations and solids only.

Constitutionally administered nostrums, of which there are many forced upon the attention of dentists, for the much-talked of "elimination of uric acid," and other imaginary causes of oral pyorrhea, will in no case be of the slightest avail.

The pyorrheatic inflammation and its cause *is in the mouth* and relief can be affected by local means and local remedies alone.

Following each treatment as suggested, phenol sodique may be freely used by the operator while applications of deliquesced zinc chloride (on wood points alone) should be made in the pockets.

Zhongiva, an almost indispensable adjunct in all pyorrheal conditions, is a special local application for *patients'* use; it has a distinct and positive value for the relief of pyorrhea and all other inflammatory conditions of the oral cavity. It is not a dentrifice, neither is it, of itself, a positive *cure* for oral pyorrhea in any case and especially so when unattended by necessary instrumentation. It may be prescribed by medical and dental practitioners with the greatest assurance of benefit. Its value is established through more than twenty years of successful application. It may be used *ad libitum* both before and after instrumentation, but its greatest benefits will appear if used after instrumentation. Applied to the gums, on cotton or lint, it should be used in full strength or it may be diluted one to three times in water and used as a general rinse for the mouth. It is antiphlogistic and germicidal, while exerting a markedly soothing and healing influence upon all wounded and inflamed mouth tissues. It stands alone in having special

determination to the mucous membrane of the mouth. Under its stimulus, morbid elements are thrown off and healthy granulations stimulated. Absorption of the alveolar process and gums, and the consequent loosening of the teeth, is thus deferred and prevented. In the present state of almost universal unsanitary mouths it were well if, as a *prophylactic*, zhonggiva could be put into the hands of every patient and used daily. It is refreshing to the mouth, with an immediate and noticeable effect upon the breath. With a record of over twenty years' use, I have never known a case where it has failed to alleviate inflammatory conditions of the mucous membrane. It is equally beneficial when applied to inflammatory conditions of the fauces, pharynx and tonsils. Although formulated originally for pyorrhoeic conditions only, the extensive use of this prescription has demonstrated its value in allaying pain due to the pressure of retarded erupting wisdom teeth. It has been applied in hundreds of instances for the help and relief of such inflammations where, prior to its use the lancet was the only resort; in every instance it has afforded immediate comfort, and eventually, permanent relief, attended with the safe eruption of the tooth.

"Faulty Metabolism a Predisposing Cause in Oral Pathology," written ostensibly from the scientific side, was undoubtedly put out to undermine, as far as possible, the cause of oral prophylaxis, and impede local treatment, the one and only remedy for alveolar pyorrhea.

That paper, and one that followed it by the same author, called "The Dawn of Dental Medicine," were, in my opinion, thrown to the dental profession as mere sops of flattery. They may have found wide circulation because of the facilities for distributing advertising matter by the firm that sent them out. Possibly they may have reached many in the profession who are denied access to really instructive articles.

The matter of greatest importance for a profession is not exaltation of any individual, or remedy, but it is, rather, the promulgation of truth. I believe my articles have set forth truth and true conditions to the profession. They are read and apparently approved. Requests for reprints come to me from all parts of the country. Is there anything more important before the dental profession today than the prevention of disease in the human mouth?

Dr. E. C. Kirk, who stood at my chair and examined a number of cases showing the astounding results of the prophylaxis treatment, said to me: "Dr. Smith, if our theories of decay are correct, this certainly is the solution of it." If the conditions I had the pleasure to reveal to Dr. Kirk, the same that I have shown to scores of others in the profession, furnish the "solution" of the pathological condition of decay in human teeth, as it certainly solves the matter of oral pyorrhea, would it not seem that the journals of dentistry would magnify their office by making some adequate and truthful mention of the matter?

These discoveries are not less important for the profession than for humanity. Some of the journals carry from year to year, on their title

page, the motto "Devoted to the Interests of the Profession." Is this motto but mere formality and pretense?

The attractions thrown around utilities, in the half usually devoted to advertising, suggest that these trade journals may, after all, be primarily devoted to the "interests" of the commercial houses from which they are issued. If the journals will publish it, I shall take pleasure in preparing an article on "Pericemental Abscesses and Plagiarism," giving some facts which will throw light on the reason why prophylaxis and all articles relating thereto are studiously ignored by them.

Our monthly magazines are wide open for all discussion bearing upon the insufficient and threadbare matters pertaining to repair (filling) of teeth, the making of dental bridges and plates, and the details of the mechanics of the laboratory. Are such matters to be forever judged sufficient and adequate to meet the important obligations resting upon an educated dentistry?

The principles which underlie the science of Oral Prophylaxis—the prevention of disease in the human mouth—are already appealing with force and favor to both Medicine and Dentistry. They are also increasingly studied and observed by the more reflecting and refined of the community. Can the journals long continue their present course of barring from the profession matters of such vital concern as that discussed in the articles "Prophylaxis in Dentistry," "Systemic Infection Due to the Natural Teeth Conditions," "Six Years' Work in Oral Prophylaxis," "Alveolar Pyorrhea" (two papers), "Pericemental Abscess," "Necessity for Reform in Dental Education," and others?

Irresponsible, pseudo-science articles, defamatory of your essayist, have recently been projected with others, doubtless, to follow, as stumbling-blocks to the profession. The main object of these papers is the commercial exaltation of some one of the impotent concoctions advertised as internal constitutional medicaments for oral pyorrhea. Such advertising, however profitable now, will in the end prove futile to divert attention from truths which are inevitably destined to supplant the present inadequate conceptions and methods in the teachings and practice of dentistry.

In closing, permit me to say, it may not be generally known that since I read the first paper on "Prophylaxis in Dentistry" before this North-eastern Dental Society of New England in this city just ten years ago—a paper that laid the foundation for the scientific treatment of oral pyorrhea.

two of our dental colleges have established chairs for the special teaching of "Oral Prophylaxis."

WHAT is Life but the angle of vision? A man is measured by the angle at which he looks at objects. What is life but what a man is thinking of all day? This is his fate and his employer. Knowing is the measure of the man. By how much we know, so much we are.

—Emerson

PORCELAINIZING THE USUAL ENVIRONMENT OF DECAY IN VITAL TEETH *

By C. H. Land, L. D. S., Detroit, Mich.

PREFATORY REMARKS.

No greater pleasure could be afforded than to again appear before this association, and after so many years still find such a large per cent of old acquaintances, especially those who can corroborate some of my first efforts in Porcelain Dental Art.

In the state's literature, it appears as far back as 1884, and at the time of the reorganizing of this society, I gave demonstrations with my gas furnace and showed various specimens of porcelain work. At that time there were present such men as Dr. J. Taft, Dr. Jennings, Dr. Watt, Dr. Rehwinkle, and many others, all of them much esteemed for their loyalty and untiring efforts to advance the interests of our profession. There is embossed in my memory both the photographic scenes and the phonographic records of those interesting times. There is Tom Long—and there was only one Tom Long—who, with many others, has crossed the river. Yet their spirits abide just the same as those who are now present, the most welcome of friends.

Before reading my paper, I will ask your indulgence to make a few remarks in reference to the porcelain and gold inlay patents, and relate some facts not heretofore published in dental journals.

Previous to my application for a patent on the inlay process it is on record that I had expressed a desire to present the invention to the profession without obtaining a patent, simply donate the idea. After consulting with my attorney, he advised me that until I obtained a patent there would be nothing of value to give, nor would there be any protection either to myself or the profession. In this instance the advice has been thoroughly verified.

After securing the patents, on December 7th, 1887, I negotiated a contract with Dr. Albert Robinson of Grand Rapids, Mich., whereby he purchased the right to use the patents in Kent county. For this he paid me \$200. Very soon after this transaction Dr. Robinson obtained a U. S. patent for merely filling the matrix with gold, and began to issue licenses for \$25 per year for office rights to practice the process. Here we must realize that in the original application for my patent on the porcelain inlay I also put in a specific claim for filling the matrix with gold; this claim was rejected on the ground that I could not hold a specific claim for both gold and porcelain. My attorney then changed the wording as follows: Claim 7—“The herein described process of shaping a filling substance into the exact form of a cavity of a decayed tooth”; again in paragraph 80 it reads, “I do

*Read before the Ohio State Dental Society, December, 1908.

not limit myself to any particular substance to be molded into the matrix." Notwithstanding this apparent care Dr. Robinson, shortly after securing the rights for Kent county, filed an application for a patent, which was allowed, and covered specifically the filling of the matrix with gold. The first intimation that I had of this state of affairs was when a certain dentist arrived in Detroit possessing an office right issued by Dr. Robinson for \$25. This made it necessary for me to file an interference at Washington, which was contested and won at a cost to me of \$500. Then the patent, No. 454566, was duly issued to me; it covers broadly the gold inlay. Under all circumstances it will be seen that I did not run after the patent, but on the contrary inherited it, with the results that the inventor had to expend an additional \$500 in order to be permitted to practice his own invention.

The foregoing is a complete answer to those who have openly accused me of stealing the idea.

After securing the patents I brought suit against Dr. W. C. Herbert, principally for the purpose of testing the sincerity of the Dental Protective Association, of which I was a member. The evidence secured caused me to send in my resignation, as I had no confidence in its methods. At this time I had organized the Porcelain Dental Art Company, advising the company not to collect royalties on the process but be satisfied with the commercial features. However, my fellow members did not agree with me and failed to live up to their contract, so that I was compelled to insist upon the payment of \$18,000 for my stock and the patents, then I would resign and let them run it to suit themselves. It all resulted in a compromise, wherein I agreed to assume all the debts of the company and give them \$8,000 cash within a year. The debts of the corporation I paid and, after earnest endeavor to fulfill my part of the contract, was forced into bankruptcy, finally receiving my discharge. As all the patents on the inlay system had about expired they were, substantially, worthless.

Referring to Dr. Taggart's patent process, it does not seem to me to add any real value to the art; on the contrary, I look upon an inlay formed without a matrix as absolutely inferior in practical results when both are manipulated at their best, and in view of the former state of the art cannot see how a valid patent can be sustained. Since suit has been established, I believe it both fair and honorable to require that its validity be established, in order, if we are defeated, that we will be perfectly willing to pay a royalty on either a machine or process.

Sentimentally considered, I do not believe in collecting royalties on processes, yet would be willing to pay to a brother dentist a reasonable royalty for any process that proved to be valuable in dentistry, and I think that many times a process is more valuable than a machine. When such things are prospected, we should be careful not to go too far in the directions that may deprecate the efforts of the inventor. Then, if a process

should prove to be of real value to the profession, why discriminate in favor of a mechanical device of equal or less value?

In the Taggart instance, the invention claims both mechanical and process features, which seem to be of about equal value. I would be pleased to know the force and effect of his patents, and I have offered to donate to both sides of the contest for the purpose of having the validity of the patents finally determined by judicial decisions.

In this connection I take the liberty of calling attention to the following letter from Dr. Crouse and one from my attorney, leaving to each member the right to draw his own conclusions:

The Dental Protective Association of the United States

J. N. CROUSE, Chairman, 2231 Prairie Avenue.

THE DENTAL DIGEST

\$2.00 per annum.

DR. A. L. LEGRO, Detroit, Mich.

CHICAGO, August 23, 1907.

Dear Doctor:—In reference to your paper regarding treatment of Dr. Land's paper. —I had a very good reason for not wishing the paper to be read at this time and explained my reason to Dr. Land. He at first agreed with me, but later decided he would read the paper in spite of my explanation. The facts are these—the receivers of the Land estate, he having gone into bankruptcy, are bringing suits against members of the Protective Association for infringement of the Land patents on inlay work, and the reading of his paper would in all probability have given these patents a standing which would be apt to have an influence on the court favorable to them. Hence, owing to the position I hold in the Dental Protective Association, it is my duty, although a thankless one, to be to all the trouble necessary to defeat these claims. Therefore, I made a strenuous effort and succeeded in keeping the paper from being read in the Section.

Although Dr. Land claims to know nothing about these suits, I have a suspicion he knows all about them; and it would be very much like the attorneys in charge, who are very shrewd, to have indirectly gotten the paper written and presented to the N. D. A., so as to get a standing in the courts for their claims.

As my duty is a thankless one, without compensation, and a great burden to me, I feel I had a right to take just such action as was taken by the Association. If you should happen to be one of the members of the profession against whom suit was brought, you would probably feel as I do in the matter. At any rate, I have no apology to offer for using my influence as I did. And you can make the explanation I have given, in full, if you see fit, to your state society. I have omitted some matters which I could give you in addition to those given, for the reason that I do not at this time care to make them public.

Yours very truly,

J. N. CROUSE.

(Copy)

DR. C. H. LAND, 64 Elizabeth St., W., Detroit, Mich.

Dear Doctor:—I have had the record of your bankruptcy proceedings looked over and the situation is as follows:

1. Your patents were listed as of no value.
2. No trustee was appointed in the matter.
3. None of your patents were conveyed or attempted to be conveyed, and nothing was done with them.
4. You were discharged.
5. No creditors appeared for any purpose.

Very truly yours, G. W. MOORE, Attorney.

(Copy)

PORCELAINIZING THE USUAL ENVIRONMENT OF DECAY IN VITAL TEETH

This relates either to the partial or entire covering, coating, or re-enamelling of the dentine of vital teeth. We should recognize that the dentine is the protecting medium of the pulp, and that the enamel is the non-conducting, protecting medium of the dentine; that the enamel is frequently deficient or not fully developed, and that from 1-4 to 3-4 of the enamel may be absent either from acute decay or abnormal development, as shown in the engravings from A to I.

The engravings A, B, C and D represent a suitable case for re-enamelling, porcelainizing or overlapping, in place of inlaying.

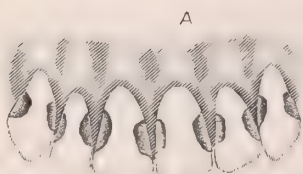


Fig. A.

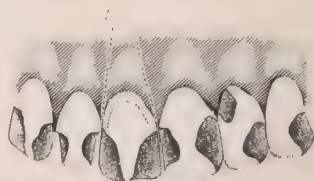


Fig. B.

II-I is a case wherein the entire crowns of thirty-two teeth were entirely denuded of their enamel, and entire hoods or veneers adjusted.

E is an extensive case of erosion, where 3-4 hoods were adjusted.

In the engravings II-I may be seen characteristic cases of deficiency of the normal enamel, where nature strongly suggests the remedy—re-coating with artificial enamel or the porcelainization of the exposed dentine. E shows a case of erosion where chemical solution has removed two-thirds of the normal enamel. In the series of teeth C, they indicate about one-quarter the enamel absent, also a portion of the dentine. A represents about the limit or halting point of porcelainizing, or, as one of the gentlemen present has suggested, in preference to inlaying, onlaying.

In this paper it will be observed that I confine the discussion specifically to vital teeth, that I recognize a very wide distinction between operations performed this side of devitalization, and that I realize that the moment we cross the line we depart from the true field of operative dentistry and lose the incentive to be protectors of life, as nature intended. While on the negative side we come in immediate contact with the vast

field of commercial dentistry with its manufactured gold caps and porcelain crowns, never intended for vital teeth, and its total annihilation of all the natural organs. Again, this emphasizes the claim for the real operative dentist to be known as one whose skill treats and restores conditions, but does not destroy any part of the dental economy that is saveable. Herein lies the real skill of the individual, and no substitutes are required. True professionalism ends where skill is delegated, or chromos purchased and sold to represent real art.

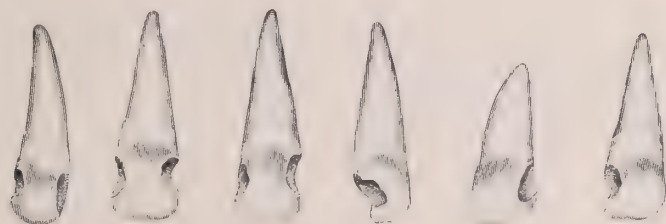


Fig. C.

In the group of engravings shown, all are vital teeth and all must be treated and restored by careful, individual skill. As a criterion, I will proceed with the engraving A. This is taken from a case in actual practice, and this particular operation may seem, to those who have not had many years of practical experience in which to study the results of such a case, too far in advance of the usual methods. In some clinics that I have given before dental societies, some present have classified it as a case of malpractice on my part and have not realized that, in all surgical operations, the spectator is the one who is apt to feel the greatest shock. Not-

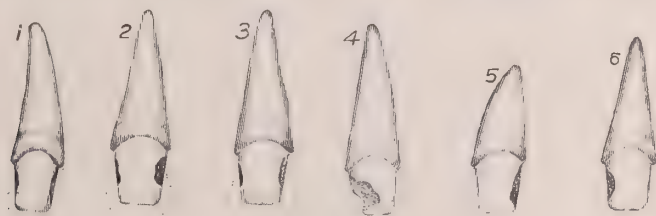


Fig. D.

withstanding, an operative dentist is released from all responsibility of intense surgery when he operates on an osseous structure, whose foundation is provided with a periodontal membrane, and his operations should be considered minor when certain members of the profession constantly sacrifice the whole structure.

A brief history of this operation may be of interest. The patient, a young lady about 19 years of age, sought my services to have all the gold removed from the teeth, as here illustrated. Since I had made such a remarkable improvement for both her uncle and aunt by displacing gold for porcelain, she did not see why she could not appear equally as well as they had for the past ten years. Also, two of her cousins testified to the value

and comfort they had experienced with porcelain work for a period of eighteen years. The uncle consulted with me, and owing to the comparatively small amount of decay, agreed that inlays would be the most suitable, at least, until subsequent decay might make it necessary to cover the entire dentine. The girl's mother interfered with this arrangement by informing me that she had seen a great many porcelain inlays in teeth which looked like patchwork, and as I had entirely coated the uncle's teeth,

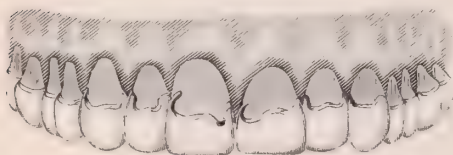


Fig. E.



Fig. F.

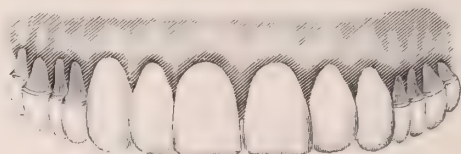


Fig. G.

did not understand why an old bachelor of sixty should outshine her young daughter, and requested me to entirely cover the teeth.

In the illustrations, from A to J, the onlay system is clearly revealed, in practical application, from its maximum to its minimum.

In practice the first step is to cut off one-fifth of the length of the incisor teeth, as shown in the engraving A, Figures No. 2, 3, and in the engraving B, Figures 1, 2, 3, and engraving D, from 1 to 6, and in engraving F, see the four incisors and one cuspid. In engravings H-I, thirty-

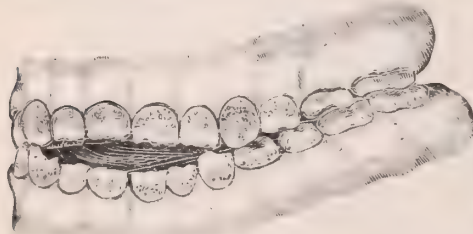


Fig. H.



Fig. I.

one teeth are involved, total number of teeth re-enamelled fifty, averaging fifteen years each, without the loss of any tooth structure from decay.

It will be apparent to the most casual observer that, in the attempt to restore the teeth as shown in the engravings H-I, gold would be both abhorrent and incompatible, and as in A-B-C, a temporary device of partial success. Porcelain proves to be far superior in every instance, as shown from A-J in the illustrations A and B. Figures 2 and 3 indicate the comparatively small amount of normal enamel that is removed in order to

make room for a three-quarter coating of artificial enamel or outlay; the dotted line indicates the relative proportion and form of the addition. Also, in C and D, the dotted outlines show the relative amount of normal enamel removed in the individual teeth. In E-F-G is shown the evolution brought about in treating a case of erosion: E is as first presented, F as prepared, and G, the six anterior teeth, porcelainized. Hollow shells or veneers have been cemented over the foundations, as shown in the engraving.

DISCUSSION.

Dr. W. A. Price, Cleveland: A point I wish to speak of: I cannot see how I would be justified in making an all porcelain restoration when I can secure more strength by using a gold and platinum alloy in the back, with the porcelain in front. I am very sure, and from experience, that restorations made in this way will not have to have so large a number removed as one thousand in twenty-three years, as stated by the essayist. That seems unfortunate, and while, no doubt, he put on many a day, it seems a lot of crowns to have to remove in twenty-three years. It averages one per week about, and I am of the opinion that if those crowns had been built up by using the metals for the strength, and the porcelain for the aesthetic part, it would not have been necessary to remove very many.

My method is to use the artificial stone that I have suggested for gold inlay work, for building up the gold and platinum foundation and lingual restoration upon by casting directly into the stone cavity. The wax model for the restoration is prepared with a cavity cut into its labial exposure, which cavity is produced also in the gold and platinum alloy of five per cent. platinum. Two per cent. platinum can be used, or even pure gold. This porcelain inlay is often baked directly into this cavity before the gold is removed from the stone model. In cases difficult to match colors, the gold inlay, with its open labial cavity, is cemented into place and an impression taken of the labial cavity with platinum foil, and an inlay fused and cemented into it. This produces a very strong restoration, with all the aesthetic advantage of an all porcelain inlay and the strength of an all gold inlay. These are the most satisfactory inlay restorations I have made in the anterior teeth.

Dr. Land: In reply to Dr. Price's claim that the greater strength is obtained by adjusting the porcelain fronts to gold and platinum alloy backings, can say that in such instances where the small pins represent the strongest factors they are, in reality, more unreliable than where the same grade of porcelain is fused into the undercuts of the metal base. In the latter class I found it necessary to remove the crowns or caps, not on account of their lack of durability, but to hide the joint, which, after seventeen years of satisfactory usefulness, had been exposed by the normal unfolding of the gum tissue.

Dr. L. E. Custer, Dayton: About 25 years ago Dr. Land gave us the system of porcelain *inlays*. A system that is used the world over today. Tonight he has presented us with a system of porcelain *onlays*, which bids fair to become just as popular as the other.

It was hard for me to conceive that in such cases as those on the left hand of Fig. 8, it would be the thing to use his system, and yet, while thinking it over, I am convinced from the manner in which he described the method later on, that his system is entirely feasible, and we cannot question but what teeth treated in that manner will certainly present a very much better appearance than by any method of porcelain inlays, or of gold inlays. As to the strength of these operations, it seems hardly possible that this operation can have the strength which he claims it to possess. Yet, after a second thought, you must bear in mind that the porcelain is heaviest on the incisive edge,



Figure N.



Figure O.

where it is subjected to the greatest strain, and yet, up at the gingival, where the strain never comes to it, there it may be quite thin; and therein I think lies the fact that this is an operation of great strength after all, and it presents the best appearance that is possible, and with all the strength required of the common, ordinary use of teeth.

Dr. J. R. Callahan, Cincinnati: It is a great pleasure to sit, as we are today, under the fertilizing tassels of one grown gray in the development of porcelain as applied to dentistry. All things human seem doomed to failure. So good and useful a man as Martin Luther, felt in his last days that life itself was more or less a failure.

Those of us who took part in the development of cohesive gold fillings, and have been more or less expert in that beautiful work, have been many times greatly discouraged by the total failure of many cases that we had thought perfect. Many failures in porcelain inlay work are now being brought home to us. It is, however, but fair to say that the porcelain inlay is yet comparatively young, and we are rapidly learning its limitations.

The wholesale removal of enamel, as advocated by Dr. Land, brings to my mind a condition, that so far as I know, has not been touched upon. What happens to the vital structure within the tooth when so large a portion of its protecting coat is taken away—either by chemical or mechanical means?

The effect will be a continual stimulation of the dental fibrilla thus exposed. This constant stimulation leads to irritation, to inflammation and all of the constructive and destructive conditions that you are all familiar with.

The least irritating covering we can place over the denuded portion of dentine is the porcelain and intervening cement layer, so I think we are justified more frequently in removing a large amount of enamel when we intend to replace it with porcelain. Suppose we take an extreme case of erosion, something like this condition (illustrating). If we cut it for inlays, we still have an irritable condition under the porcelain enamel line, and that is the idea that I propose to profit by, if I understand it thoroughly. If we can conceal the cement line by this process, we have gained that much. Then, if I place a facing on the tooth after this fashion, and it lasts ten or fifteen years, whatever it may last, then when pulp failure comes and I have for any reason to remove this porcelain facing, I still have the tooth there to build a crown on. Now, if the life of a crown is ten years, and the life of this work has been ten years, I have gotten twenty years' use out of that root; whereas, if I let it go under some of these conditions, I have added ten years to the usefulness of this root. So I would feel justified in going to extremes in that condition.

Dr. W. T. Jackman, Cleveland: I want to call your attention to that star tooth, No. 4. When you put a jacket crown on like that partial crown, we are now looking at the lingual face of the tooth, the thought comes to me that when the tooth has been denuded of part of the enamel, possibly all, on the labial side, the pulp may die by and by. If so, we have access there to the natural tooth, the pulp may be removed without removing the jacket crown, and thus we save the jacket crown.

Dr. E. C. Mills, Columbus: The item of strength seems to have entered largely into the discussion of this restoration, and I want to add one word in explanation of the experiment that was made in Ann Arbor, I think in June, 1906, with two or three dentists. Dr. Spalding, of Detroit, was instructing on the porcelain shell crown, made after a plan that was originated by Dr. Land. When the crowns were finished the question of strength arose in our minds. I told Dr. Spalding it did not look to me that the strength required on the incisal edge was there. He said, "attempt to break them." We cemented them on sticks, and after the cement was thoroughly hardened, we had a poplar plank, and with the crown so cemented on the stick, we struck on the plank and we made an impression fully one-eighth of an inch and there was not one broken.

Dr. C. H. Land, Detroit, Mich. (Closing the discussion)—In answering the questions asked, I will first call attention to the exhibit of porcelain flowers, which I present

as a means to demonstrate some new discoveries in both pottery and dental porcelain.

The material consists of a compound moldable mass of dental porcelain, which may be conveniently molded into any direct form, such as artificial dentures of various kinds, inlays and crowns, partial or entire. The results are much stronger, better color, and less shrinkage.

By reference to the engravings N, O, the variation in appearance coincides with the technical differences in relation to the fusing point of vitreous masses, their individual properties and classification. In treating of dental porcelains, I select the teeth and bodies of the S. S. White, the Consolidated, H. D. Justi, and the Dental Supply Co., as the standard products of their kind. Their specific properties are embodied in possessing the greatest strength, superior translucency, power of holding form through very high degrees of temperature, permanently maintaining their colors, and comparative freedom from fracture by sudden changes of temperature. It will be important to comprehend that, in both dental and pottery porcelains, the world over, the criterion of excellence can only be reached at an exceedingly high fusing point, the higher, the better. The lower fusing rapidly reaches into the field of inferiority. Such evidence, as here quoted, supported by the practical results, as shown in the engravings, N, O, may convey to you the substantial reasons, that induce me to persistently advocate bodies and enamels, whose formulas represent the same, or similar, forms of compositions as the materials from which the standard teeth are made. While I am willing to admit a slight variation in certain points of excellence between those quoted, will claim that it is not enough to disregard their general efficiency. Referring to the engraving, N, Figures 1 to 8, and the engraving, O, Figure 3, the bodies of each manufacture are well represented, they represent varying degrees of fusing point, power of contour, opacity and translucency. It would not be possible, on seeing these samples, for any one of the manufacturers to identify his own goods, although the various effects that take place in their own furnaces are well illustrated at similar stages of vitrification or semi-fusion.

In O, Figure 3, may be seen a fungus formed from dental porcelain. Note, that in texture it resembles the vases A and B. All represent dental porcelain when partially fused, but subjected to higher degrees of heat would result in translucent masses. In fact, all classes of porcelain or pottery, if sufficiently heated so that they become thoroughly vitrified, would be glass, to such an extent, as to destroy their usefulness in the potter's trade. Potter's porcelain and china are so compounded that the infusible represents the framework, the lower fusing being added merely as the binding medium. The intention is not to carry the fusing point out of the region of semi-translucency, while dental porcelain must be carried to perfect translucency, which leaves it less homogeneous than glass, but of definite form. Dental porcelain represents the dividing line in vitreous masses, where the pinnacle of success will retrograde from the ideal center between opacity and transparency.

In N, Figure "1" is formed from body furnished me by the Dental Supply Co., the design is from a plaster cast taken from the back of a mushroom, and the fusion was carried to that degree of temperature which gives a result equal in translucency to that of the natural teeth, this with but slight change in form. Figure "2" is the same body fused at a higher temperature, which, in dental porcelain, would be over-fired, and although approaching transparency, the perfect outline of a leaf and flower has been preserved. These properties are not found in any of the lower fusing masses. Consequently, in proportion as we descend from the highest point of fusion, we recede from the higher and more useful forms of tooth porcelain into a narrowing field of opportunity.

In the engraving "N," the Figures 9 to 15 are composed of a new and original form of porcelain, that I have devised, not only for the dental purposes, but for the entire pottery field, as well. It possesses unusual and superior qualities, not heretofore known, and cannot fail to be of value to both dentistry and the potter's art.

Since exhibiting the most of these specimens before the Ohio State Dental Society. I have added the roses, the fringed gentian, No. 13, and the vases A and B. All of which could not be so well accomplished without the aid of the improvements, as here demonstrated. The specific advance is in greater strength, easier manipulation, superior power of contour, less shrinkage, and preservation of the color pigments. An important fact is, that all these specimens were fused in a furnace, which was operated by the ordinary chimney draft, and used for fuel the 80-cent illuminating gas.

I have devised a burner that will operate either with natural or illuminating gas, kerosene or crude oil, or oil and gas combined, without changing any of its parts. It will do the work with greater precision, and the results are far more satisfactory than those from any other furnaces.

RESTORATION OF BADLY BROKEN DOWN TEETH *

By C. A. Ruhlin, D.D. S., Mt. Gilead, Ohio

THERE has been much said in regard to restoration of roots of teeth that are badly broken down below the gum margin, by some kind of a crown. The two methods that I will endeavor to describe are simple, yet they make a permanent piece of work if properly adapted so as to conform to the root.

First is by the partial band method. Push the gums out of the way by packing cotton or gutta-percha over the end of the root until you get perfect access to the end of the root. Then grind off any part of the root that may stand out of the gum, and articulate a porcelain crown, (any make you desire to use). Cut a disk of 30 or 32 gauge gold plate to fit end of crown: punch a hole in disk to accommodate the pin, then burnish to end of crown and place it on the root. After you have filled up the broken down part of root a little flush with beeswax, then press to place and trim the wax to conform to root and crown, making the restoration with the wax and then remove the crown with wax intact. Cut a piece of 32 gauge, 24 karat gold and form it over the wax, just to come to the outline of the wax on the root end; let it extend down over edge of crown about 1-16 of an inch at the crown end. (It is a good plan to grind the crown down about the thickness of the gold along the edge, where the gold will extend, so as not to have any projection on the side of the crown). Remove the disk and extended piece of gold, together with the wax: invest and solder them together: then it is ready to polish, and place on crown and root by cementing them in place.

The second method is to prepare root and crown the same as first method, but do not use gold disk. Moisten the root, place some inlay wax (warmed) over the end of the root, then warm the post of the crown and press through the wax till the crown is in articulated position: trim the wax so as to conform to the root and crown: then chill the wax, remove the crown and wax together: place sprue wire in the side of the wax: invest and burn out wax, and cast gold or acelite onto the crown and pin. (I will not take time and space to describe methods of casting onto the crown, as that has been described through the journals by more competent men). Polish and cement in place.

*Clinic at Ohio State Dental Society, 1908.

THE REDUCTION OF A DIFFICULT CASE OF LOWER PROTRUSION

By F. E. Williams, D. D. S., Grand Rapids, Mich.

THIS case came to me about the first of March, '07, and after consulting me several times they decided to have the case corrected, and commenced March 15th. I did not promise the parent I would give the boy a perfect occlusion, for I had neither seen nor read of a case in which the occlusion had been shifted the distance of three-quarters of an inch, combined with the expansion necessary and at the age of this

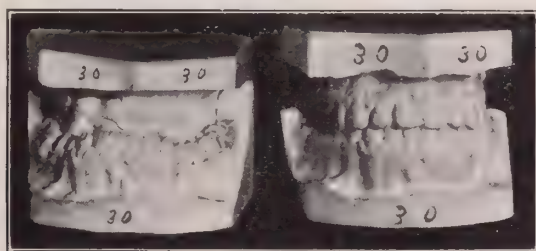


Fig. 1.

patient (seventeen). In fact, Dr. Hoff, of Ann Arbor, saw the case when it was first started and remarked to me in my office that it was an exceedingly difficult case to handle, and he would hesitate to undertake its treatment at the age of the patient, "as the chances of success are limited."

The history of the case is somewhat interesting, in that it shows where

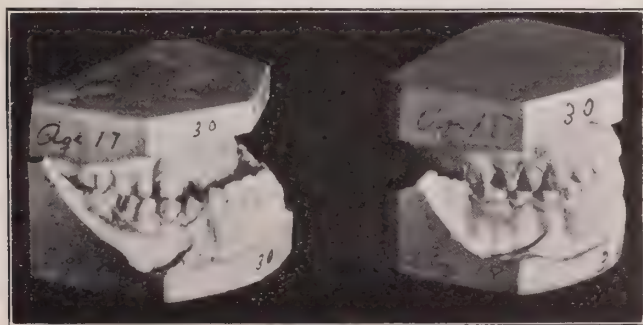


Fig. 2.

the general practitioner did, and does in some cases now, fail. The patient may have inherited a tendency to the protrusion of the lower mandible, but the dentist helped it on to a great extent when he advised the extraction of the upper (or any deciduous teeth, for that matter) too soon, to make room for the erupting permanent teeth, so that they might come in in

their proper place. But there was recession of tissue following the extraction, instead of an added growth, and consequently less room than would have resulted had the deciduous teeth been allowed to remain.

The condition seen by a front view of models before correction, shows us the lack of development of the process in the superior arch, mostly resulting from the extraction spoken of. Then the inherited tendency of

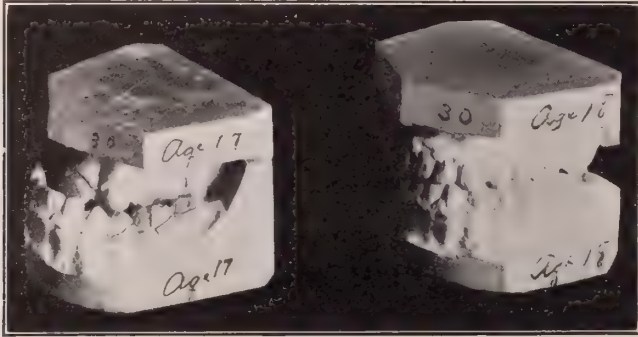


Fig. 3.

the protrusion of the lower jaw was developed by the biting of the mandible forward, and in this case by breathing through the mouth and relaxing the mandible and dropping it forward until the case resulted as is shown by the model before correction.



Fig. 4.

On account of the constriction of the palate the nares were not developed, as would naturally result, and with the protruding of the mandible, keeping the lips apart, we find the patient breathing through the

mouth and had done so as long as he could remember. This was a case of lower protrusion, instead of the upper teeth protruding, as is generally the case.

The patient could not remember the time when he could masticate his food, not properly, but scarcely at all, for he had practically no occlusion, and it resulted in the swallowing of his food without much attempt at mastication; though, he says, he ate everything and anything he wanted, without regard to diet, as one would suppose he would resort to, to help remedy the lack of masticating surface. But that would have come later, for he did not suffer when in his growing condition as he would have after he had attained his growth; still there were times when, he says, the trouble with his stomach was so severe that he had to remain in bed for several days and receive treatment at the hands of a physician, and many times



Fig. 5.



Fig. 6.

he would be distressed in a milder form. The condition he was in was not surprising, when we take into consideration his inability to masticate.

His facial view and profile both show that there is a lack of development in the incisal region, due to the upper laterals being forced, in their eruption, into lingual occlusion, and in their development the roots being forced palatally to their normal position from lack of space, thus allowing for the entire anterior constriction of the palate, while the lateral constriction was equally as great, causing the deep lines at the angle of the mouth and a rounded formation of the upper lip, the angles of the mouth being drawn downward, giving the narrowness of the lip, as shown in the face view of the photo.

The profile does not express the protrusion as it is, though the expression is natural. It does not show the protrusion as it should be shown, because the teeth are not closed tightly together; the mandible is dropped

downward as in the act of breathing, and from habit. This disappointment is due to trusting to the photographer to do as instructed, and being too busy at the time to attend to it myself. The picture I received was all right, but I ought to have had another as mentioned, to show the degree of protrusion. When the photos were sent me the case was too far along to remedy the error, and so am compelled to call your attention more closely to the models to get the degree of protrusion.

Taking the first permanent molar as the key to occlusion: The lower jaw bites so far forward that the upper first bicuspid teeth bite mesiodistally, where the mesiobuccal cusp of the upper first molar should bite in articulation with the lower teeth; and on the right side the distance of



Fig. 7.



Fig. 8.

lower protrusion is a little greater. The buccal groove of the first molar biting even with the mesial surface of the upper first bicuspid, making on the right side a lower protrusion of quite three-quarters of an inch.

This young man was seventeen years old when I began the correction; he had nearly attained his growth, making it much harder to correct than it would have been if he had been several years younger, and it is doubtful if the case would have been corrected even now, but the protrusion was so great and so noticeable that when on the street he was extremely sensitive in regard to the attention he attracted, also in meeting strangers.

The case was corrected by the expansion of the upper arch, moving the laterals forward into position, turning the several teeth that were in torsal occlusion, including the bicuspid teeth, constricting the mandible in the neighborhood of the molar teeth, and shifting it backward the entire distance necessary for correct occlusion.

The roots of the upper and lower teeth were already so near the surface that I had to be careful of any tipping of the roots labially of the lower incisor teeth, or any marked protrusion of the upper; and it would have been impractical as well as impossible to have moved all the upper teeth forward on account of the time necessary and the position of the roots as already mentioned.

An interesting feature of the case was the upper teeth biting almost entirely inside of the lower teeth, and, after I had the necessary expansion, the patient could not close the incisor teeth within half an inch, and at that time the occlusion was nearly shifted. The difference mentioned was caused by the posterior upper teeth expanding up over and buccally to the lower teeth, thus throwing the incisor teeth apart and depressing the pos-



Fig. 9.



Fig. 10.

terior teeth (upper and lower) sufficiently to allow the upper incisor tooth to overlap the lowers, was the most difficult portion of the correction to accomplish, but the finished models are sufficient proof that the case was not impossible and that correct results were obtained.

The case was finished June 10th, '08, taking nearly fifteen (15) months to complete, and in comparison of the models after correction, you will notice the teeth are in correct occlusion; the upper arch expanded and the lateral teeth moved labially into position. A comparison of the upper models shows an expansion of the arch in the region of the first bicuspids of three-eighths of an inch and the second bicuspids of one-quarter of an inch, as seen by the open models.

The right upper second permanent molar has not erupted and I could not get any trace of its appearance, so the surface of mastication on that side is faulty in that respect.

A comparison of the photographs shows the decided benefit to the facial expression. The lip line is formed correct. The effect of the expansion of the upper arch is noticed in the fullness of the features, but yet leaving a little depression about the roots of the incisor teeth which only time will correct.

The patient is enabled to breathe correctly now, there being considerable change in the nares, due to the expansion of the upper arch. His masticating surface is perfect, with consequent elimination of the stomach trouble, he not having had any distress from his stomach since his mastication was restored, and has forgotten his sensitiveness in regard to the features,—the protrusion being reduced.

The front view and profile with the lips apart and the teeth closed, showing the retainers on the teeth and the correctness of the bite, is sufficient proof that these difficult cases may be satisfactorily retained. The retainers have now been on about six months and there has not been any change since they were first placed on the teeth.

It would seem to me that this is another proof that there is not sufficient reason for resection of the lower jaw in the correction of these cases and by this method we are sure of satisfactory results, even with the adults: and in an article soon to follow I will present another corrected, exaggerated case of lower protrusion, and where the views of the reduction will better show the change in the facial expression as the teeth were closed when the photo was taken. The patient was twenty-two years of age when the case was started.

MANIPULATION OF SILICATE CEMENTS*

By J. P. Root, D. D. S., Kansas City, Mo.

WHAT is it that we desire for a perfect cement?
One remaining plastic sufficiently long for proper manipulation.
One that will neither expand nor contract.
One able to resist abrasion not excessive.
One impervious to moisture.
One absolutely insoluble.
One with proper color.

This new class of filling material is a silicate product, made from the silicates of lime, alumina modified by the addition of other basic silicates. The liquid is a solution of orthophosphoric acid, containing aluminum phosphate and other ingredients, what the other basic silicates and other ingredients are I do not know, as I am not in the confidence of the manufac-

*Given as a clinic before the Semi-Centennial Jubilee meeting of the Indiana State Dental Society, June, 1908.

turers, and this is their trade secret, which is immaterial to us, as it is results we are after.

The combination of the powder and liquid results in a chemical action, so the product may be termed a chemical porcelain; in all chemical products there must be a definite proportion of each ingredient, or else there will not be a harmony of results, so in Translux a sufficient quantity of powder, no more, no less, must be used to satisfy the liquid. Experience is the teacher regarding the proper proportions, and today, when ready for insertion, the mix I use is about of the consistency of the cream of fresh chocolate candy. While this is rather indefinite, it is as good a description as I know of. The reasons for this consistency are my belief that the chemical union is perfect.

It is essential that your cavity and tooth be dry, so always use the rubber dam. The cavity preparation differs from that for gold in three particulars; no particular point of retention is needed, only a general retentive shape. Margins should never be beveled, and cutting of sound tooth structure for ingress is unnecessary. This cement is held in the cavity mechanically. While the tooth is dry it will stick thoroughly, but as soon as the natural moisture returns to tooth there is very little, if any, adhesion, so your retention must be ample.

Before mixing powder and liquid, be sure every desired instrument is in place, and if no matrix is used have ready a celluloid strip slightly coated with cocoa butter, place powder and liquid on glass slab, draw in a small portion of the powder into liquid, spatulate thoroughly with onyx spatula, only light pressure is needed in spatulating; add powder until mix is of desired consistency. Take up small portion on end of small instrument (and, notwithstanding any directions accompanying the product, refrain from using any vaseline, oil or cocoa butter on instruments: 'tis unnecessary, and many fillings have been ruined by such practice), smear inside of cavity, filling any existing undercuts. Then add sufficient to fill cavity, place celluloid strip between teeth, lap it over lingual and labial surface, draw tightly and with flat burnisher burnish over outside of strip. hold for moment or so with pressure before removing. This is for approximal cavities in anterior teeth; if used in posterior teeth your judgment will easily suggest means for different cavities, except remember not to handle or burnish with steel instruments or you will have a discoloration. The dam should be left on for at least thirty minutes.

The ideal surface is that left by the celluloid strip, but I find it always necessary to use strips and disks to remove the surplus over margins. This, of course, destroys the glaze. That I reproduce by cuttlefish disks, then, taking a piece of white silk tape, slightly coated with cocoa butter, cover this with the same powder used for filling, and, drawing back and forth between the teeth, a good surface is obtained. This is the most satisfactory of many ways tried.

I want a shade guide, and then the chances are the shade will be off.

As there is no satisfactory guide made, it was my duty to make one. A brass wire an inch long was flattened at one end, a ring formed on the other, a shallow box was made from matrix metal, filled with Translux and the flat end of wire imbedded in it; this was left to harden for thirty minutes, the boxing removed, the guide smoothed and marked to correspond to a mark on the bottle. This was coated with cocoa butter and placed in a bottle of water where it is kept, except when in use. It is always clean, it is kept wet—the normal condition of a filling.

The comparatively short time we have been able to use this class of fillings bars anyone from making positive statements. These are only from my own experience. I may be wrong in my premises. I hope not and honestly believe not, for my opinion is that chemical porcelain will go on improving, and, until we abolish dental caries by the proper use of oral prophylaxis, they will be with us.

NOTES

Remember, this is a chemical porcelain, not an ordinary cement.

The retention is mostly mechanical.

Beware of beveled margins.

Keep any form of grease from instruments during insertion.

Avoid use of hot paraffine.

Retain dryness at least thirty minutes.

Use only where properly indicated, and observe every detail, or else the result will be failure.

They are indicated especially in approximal cavities in anterior teeth (not corners), labial and buccal cavities, and in deep crown fissures in bicuspids and molars, especially in the permanent teeth of children.

When ready to insert filling be sure everything needed is at hand; you cannot safely stop during operation to hunt instruments.

If a receptacle for water is kept convenient to drop slab and spatula into immediately after mix is made, much trouble in cleansing can be avoided, as the remaining portion is disintegrated and can be taken off with a towel.

Beware of coarse strips and sand-paper disks in finishing; use fine ones, take more time and get better results.

The brave man seeks not popular applause,
Nor, when overpowered, deserts his cause;
Unsham'd, though foiled, he does the best he can.
Force is of brutes, but honor is of man.

—Dryden

THE EDUCATION OF A NATION -TEETH

By George Zederbaum, D. D. S., Charlotte, Mich.

Chairman Committee on Oral Hygiene and Prophylaxis, Michigan State Dental Society.

(Continued from Page 193, March Summary.)

Now, let us consider another vastly important medium through which the nation can be educated, and by which a nation can be more easily reached than any other way. The physician—is it not he that is first called to the bedside of his patient, is it not he who has the opportunity to sound the note of warning ere it be too late? Does he not know that the highest achievement of his profession lies not in the cure of the disease so much as in the prevention of the occurrence or the recurrence of it? But let us pause—are all the physicians well informed in the prophylaxis in dentistry? Are they all capable to give instructions to their patients relative to their teeth and their mouths? Most emphatically no! Dr. Ottolengui is certainly correct when he says that the problem of dental education of those who come directly with the people, meaning physicians, is a serious one and must be considered. The majority of the physicians, and, practically, all of the nurses, he said, are unable to recognize dental disorders. While they make a thorough examination of the body, make urine analysis, search for the presence of bacteria, etc., yet they hardly ever examine the oral cavity, and even when they sometimes do, they utterly fail to recognize the conditions as they are, and the relation the oral cavity has to the various organs and processes of the body.

Dr. Brophy certainly strikes the key note, and, I am sure, awakens the spirit of approbation in the minds of all dental practitioners, when he says that it is clear to him that there is an urgent necessity of more thoroughly teaching the dental pathology and oral hygiene in schools of medicine. So we see that a good dental teacher is needed in every medical school, to lecture on all subjects covering the field of dentistry in all such branches and to such an extent as may be of practical value and of easy application. It is not an uncommon thing for the country doctor to extract permanent teeth, thinking and assuring the parents of the youngster that they are temporary. Not infrequently they lance an alveolar abscess through the skin and send the patient to the dentist only when they break the crown, leaving the roots in situ. I have a record of many cases of putrescent pulps where physicians had been consulted first and where pills for neuralgia have been administered ad libitum, without relief. The physician is not to blame, he does not know, he was not taught, and therein lies the greatest fault. Only recently I read in a medical journal the following advice given by a practicing physician for the removal of iron stains from the teeth: "Rub teeth lightly with cotton wound on stick dipped in 50 per cent. solution of crude hydrochloric acid and water." Many physicians, on reading this valuable (?) hint, will not trust to his memory, but will

make a copy of it in his memorandum book and, in a comparatively short time, every patient taking tonic of iron will be supplied with this wonderful iron stain remover, with instruction to apply after taking the medicine. What the ultimate outcome will be is readily conceived by us as dentists and not by them as physicians, and the patient will blame the iron for the trouble which is sure to follow.

What about our boards of health? We presume that these are composed of practicing physicians, who merited the appointment on such important boards because of their special knowledge, special interest and special adaptability along hygienic lines. All these boards issue a bulletin, which contains valuable information for all, and which is distributed throughout the country to the teachers and physicians. These pamphlets are filled with valuable instructions relative the general hygiene and sanitation, prevention of epidemic diseases, etc., but they contain nothing about the teeth, just as if the sanitary condition of the school room or the outhouse is all that is necessary. The board of health does not stop to consider that we do not stay in such places all of our lives; they do not think about the filthy mouths that we may carry with us to our early graves. It is my belief that these boards ought to encourage publication of such articles as deal with personal cleanliness, hygiene of the mouth and care of the teeth. After considering the physician in his private practice and as an officer of the board of health, as a strong medium for the education of the people in the laws of hygiene, let us now consider the nurse in her private and hospital work. It is she who closely follows the physician in most cases, and it is she who can do much for us if she herself be rightly instructed. I am glad to note that the educational requirement of nurses in this country is gradually increasing, and, judging from a nurse's examination question blank I recently saw, I have every reason to believe that these questions were strenuous enough that the majority of practicing physicians of today could not pass this examination. In all of the 100 questions on different topics, there was not one that applied to the teeth, and yet, to my own knowledge (several such coming under my own observation), the better schools of nurses reject applicants with poor teeth. I would recommend that the nursing courses would contain some teaching of oral hygiene. I would that every nurse could render the "first aid" to a patient suffering from toothache as readily as the dentist himself. But that is not all. If the mouth and the teeth need care in health, they certainly need it in sickness twice over. The nurse should see to the cleanliness of the mouth and teeth of the patients under their care, even where the attending physician is too busy to think of it: he will be thankful and so will the patient. Considering the deplorable condition of the teeth of an average person, and the amount of illness that is directly traceable to dirty mouths and decayed teeth, it is really extraordinary that the hospitals should be so long in awakening to the fact that the very ordinary and simple rule of cleansing one's teeth ought to be enforced on all the

inmates within its walls, physicians and nurses included. I am glad to note that several hospitals abroad request their patients to bring a tooth brush among the list of other necessities; this is but a step in the right direction. Patients may bring them, but they may forget to use them. One more mention and I am done with the nurses—many cities in the United States have what they call a Visiting Nurses' Association. The nurses go wherever sent, mostly among the poor, and take care of the sick. It occurs to me that a great deal of good could be accomplished if these nurses would preach the doctrine of clean mouths and clean teeth along with the rest.

The next class of educators, and by no means a small class, is the teachers and the various boards of education. The school system of the United States is considered inferior to none, and many foreign countries are jealous of the fact that America offers a free education to all. Our teachers are mostly all young, energetic people, of character and of good training, calculated to better equip them for their hazardous duty of teaching the "young idea to shoot"; indeed, a great liberal country, wherein it would be a hard task to find a child of ten that could not read and write, thanks to the anti-child labor clause in our legislation, the great majority of children of this country are in its schools. You will naturally see what a great benefit we would derive from carrying on our work in the schools of our country, enlisting the army of teachers into our ranks. It is the teachers that see the children from day to day, and it is they that send home suspicious sick cases; it is they, also, who could help us to educate the nation in the care of the teeth, for that means a long step towards health. The often-heard old adage, "the destiny of any nation depends on those young elements who are now in its schools," and in the language of Sir James Barr, "If there was a little more money spent on the health and a less on the education of the rising generation, it would be much better for the nation." I know teachers who often send home some untidy child to be cleaned up, but do they realize the loathsome condition of most of the mouths of those with clean faces and dresses and with whom they will sit and breathe all the afternoon in one room? We remember the statistics given in the beginning of the sermon; do they not show that the teeth and mouth of most children are in an unhealthy and disgusting condition? Does not such a condition injure the health of the teacher, as well as that of other children already susceptible? They sit close together, breathe the same foul air over and over, and don't we know, from our own college days, how difficult it is to exert our mental powers in such an atmosphere? Besides, many youngsters have colds, nasal catarrh, sneezing into the faces of their classmates, and what not! Teachers are generally obeyed, whether from fear or from reverence, makes no difference—they get the results. I say, instruct the teachers, furnish them, along with the elementary physiology, a good book on teeth and their care, and let them do the rest. I would prohibit the exchange of pencils,

chewing gum, handkerchiefs, licking of stamps, carrying money and marbles and such like in their mouths, and the common drinking cup. Would see that each child has a tooth brush and is instructed how to use it. I positively know more than one family where all the household, be it small or however large, uses one and the same brush—family property, indeed! Dr. Roach told last year of a whole section of a city of Chicago without a single tooth brush. Ignorance of the laws of health, in my mind, is worse than an illiterate state. I wonder how many present know how many of the cheaper tooth brushes are made! Factories in Europe send out handles and bristles separately for "home work," and it is known these are taken by the poorest, dirtiest class of people to their homes to be completed! Unsanitary shacks, where pigs and chickens and sick children abound—there is where the bristles are inserted into the handles and trimmed. Teachers ought to know all this, and ought to explain why the better brush is preferable. How much different is the prophylactic brush of today! I learned from a concern manufacturing a brush by that name that the sterilization from the rough product to the completed brush, even to the container, is the strict rule of their factory. While speaking of the teachers, we will say just a few words relative to the board of education. I am of the firm opinion that such board ought to work in harmony with the medical board. In England, during the past year, a bill was passed providing for the medical inspection of school children, and the board of education there received the following recommendation: From the Interior Department Commission on Physical Deterioration—1, the teaching of the elements of hygiene should be made compulsory in all schools; and in this teaching, the care of the teeth should receive special attention. 2. That daily cleansing of the teeth should be enforced by parents and teacher. 3. That systematic examination of the teeth of children, by competent dentists employed by school authorities, should be practical, to prevent caries extending and to stop carious teeth and to remedy defects of the teeth. You will note that this recommendation calls for oral prophylaxis, for operative procedures and for orthodontia, as well, and I sincerely pray for the acceptance of such a noble recommendation as that. I would encourage the boards of education to furnish periodic lectures in public schools on the subject of the teeth, and these to be delivered, not by quacks or stockholders in any dental specialties, but by reputable men of our profession, who have interest in their work only. Recently the board of education in Bay City appointed two physicians to see that all the applicants for the teachers positions be physically eligible. This to raise the standard of physical perfection among the teachers. I am curious to know whether these men are as thorough in the examination of the mouth as they are otherwise. This important part was likely overlooked by the board of education, as well as by the medical board. Most of the parochial schools, military academies, young women's colleges, seminaries, etc., refuse

admission until the teeth of the applicants are in a good state of preservation. I would that our public schools were as strict. In some cities of Germany they have established regular biennial examinations of mouths of all of the school children. I hope Dr. Prinz will be obliging enough to explain to us what impressed him the most in connection with this during his recent sojourn in that country. Dr. Stoeckley, also, has this "educational bee in his bonnet," and I will refrain from further remarks on the boards of education, knowing he will be willing to tell us what he has accomplished.

(To be continued.)

DENTAL SCIENCE AND LITERATURE *

Report of Committee by G. C. Bowles, D. D. S., Chairman, Detroit, Mich.

OF THE material appearing in our Dental Magazines in the course of a year, but little, proportionately, is original or calls for special mention in a report of this kind. There yet remains, however, so much of practical value, new, oftentimes, only in its application, or in its lucidity of expression, and so much of practical knowledge, some of it new, much more as good as new to most of us, that the would-be reviewer longs for the power of the compressed tablet machine, that he might reduce the predigested essence of a thousand pages to ten. Lacking this power, he is compelled to make a choice. What should determine it?

Dentistry is moving, Dr. Talbot thinks, backwards. Its literature both marks and stimulates its progress. It has two main currents, the scientific, arising from the largely unappreciated, unrewarded labors of the few specially equipped explorers after the origin and cause of things, and the practical (I don't like the discrimination), descriptive of methods, technique, appliances. The writer believes that the average practitioner keeps tab on the advanced methods of constructing a gold inlay, or making a crown or bridge, but gives too little heed to the theoretical or the scientific phase of his profession. Both are essential to progress. There is no fear that the mechanical side will be neglected; this report, therefore, will deal with the other side. It will glance briefly at some of those papers which, though read before, may well be considered again.

Apparently, at the present time, the cause of erosion, or the wasting of tooth structure, is engaging the labors of our scientific workers as in no other subject. The work done, and being done, in this field, is stupendous. We may very properly begin with the results of two hundred experiments requiring ten thousand hours of the time of Prof. W. D. Miller and his assistant, appearing in the January, February and March numbers of the Dental Cosmos for 1907, under the caption "Experiments

*Read before the Michigan State Dental Society, June, 1908.

and Observations on the Wasting of Tooth Tissue, Variouslly Designated as Erosion, Abrasion, Chemical Abrasion, Denudition, Etc." In the July number appears another paper entitled "Further Investigations of the Subject of Wasting." This is a monumental work, but exhaustive as it is, much was still unsettled. Prof. Miller intended to return to the problem, but, alas for mankind, that master mind has made its last gift to that widening human knowledge toward which he contributed so generously. While all the factors entering into the process of wasting, erosion, or abrasion, are not settled, Prof. Miller has shown conclusively that great damage results from coarse, gritty tooth powders and too vigorous use of the brush horizontally applied. With the tooth brush and the tooth powder bought in the open market, he was able, in a surprisingly short time, to reproduce, in teeth out of the mouth, the various phases of abrasion and wasting commonly found in it. We, as a profession, should give greater heed to this subject of dentifrices, tooth brushes, and the possibility of damage therefrom. Some of Prof. Miller's conclusions follow: (March Cosmos, p. 246).

"Wasting of the teeth is for the most part a purely mechanical process (abrasion), in which, and often, the only factor concerned is the tooth brush in conjunction with the tooth powder. While all powders or pastes containing pumice, cuttlefish bone, or oyster shell, are particularly injurious, excessive brushing with milder preparations may severely abrade the dentin, and in course of years even the enamel. Abrasion may be readily produced artificially by the action of brush and powder.

"It has not been conclusively proved that wasting may occur, even in isolated cases, without the use of the tooth brush or some corresponding mechanical agent.

"Acids in general, especially in the strength in which they occur in the mouth, cannot produce wasting. They decalcify the tissue, rendering the enamel chalky and friable, and the dentine soft. Further than that their action does not go."

"As one who has been experimenting for the last four years on the subject of enamel erosion and abrasion, I should like to offer a few criticisms on Dr. Miller's detailed and suggestive work," writes Dr. Joseph Head, in the August, 1907, Cosmos. From Dr. Head's paper, as also from his letter to the editor, and the editorial reply thereto, both in the April Cosmos, it would appear that even Dr. Miller, omnivorous reader and indefatigable worker that he was, could not keep up with the rapid strides of science. In his experiments referred to above, he relied on the litmus test "as ordinarily employed in chemical laboratories," to determine the acidity, alkalinity, or neutrality of the saliva, and this, probably, has rendered worthless those of his observations, experiments and conclusions, that depended upon this test. Recent study has shown that in some cases saliva will turn blue litmus paper red, and at the same time turn red litmus paper blue, in other words it exhibits what is known as

the amphoteric reaction. This "curious phenomenon" is due to the presence of two salts, acid sodium phosphate, and basic sodium phosphate. "The fact that these two salts are incapable of chemically neutralizing each other is of the utmost importance in the study of the reaction of the saliva, for the reason that the reaction of the oral fluids is a factor of fundamental importance in connection with the phenomenon of dental caries and likewise of dental erosion." (Kirk, Cosmos, April, '07.)

Some of the errors into which the dependence on the litmus test led Dr. Miller, are pointed out by Dr. Head in the article referred to. Speaking of the inadequacy of litmus, he says that a 1:20000 solution of acid sodium phosphate will act more vigorously on a tooth than a 1:20, or a 1:2000 solution, and yet it will neither turn blue litmus red, nor red litmus blue. On the other hand, 3 parts of a 1 per cent. solution of acid sodium phosphate added to 1 part of a 1 per cent. solution of tribasic sodium phosphate will turn blue litmus red, but enamel immersed in it for 18 days is unharmed.

"At present we have to confess that we have no means of detecting minute quantities of acid in the saliva that may, nevertheless, be sufficient to corrode the teeth: while on the other hand, acid may be plainly indicated and yet no harmful action result . . . It should be noted that the saliva, instead of being the cause of tooth decalcification, as some have supposed, seems on the contrary, to be a valuable protection to the teeth against the invasion of corroding acids."

This opinion does not appear to be in entire accord with the findings of Drs. S. F. Acre and J. E. Hinkins, as reported in a highly scientific paper "On Abnormally Acid Saliva," appearing in the *Dental Review*, April, '08. "The normal saliva is slightly alkaline. But there are many individuals who normally have acid saliva, the consistency and acidity of which vary remarkably with changes in health and habit. In such individuals, general erosion of the teeth is one of the distinguishing features and the ravages of this malady may become so great that the teeth are eroded to the gum margins and only the roots are left. What is the nature of the acid or acids? Are they organic or inorganic, or acid salts like sodium, di-hydrogen phosphate, or a mixture of all of these?" They can be produced in the following ways:

1. Acids can be generated by bacteria in the saliva after it has entered the mouth and bacteria have come into it from the mucous membrane of the mouth and from the teeth.

2. Bacteria, aerobic and anaerobic, imbedded in the mucous membranes of the mouth and in the teeth can generate acids in situ from constituents of the saliva or from epithelium, which can then flow into the saliva and make it acid.

3. Aerobic and anaerobic bacteria, inhabiting carious places in the teeth, generate acids which may exude into the saliva.

4. Bacteria inhabiting the ducts leading into the mouth can generate

acids from the constituents of the saliva or from the walls of the ducts and the acid is taken into the mouth in the saliva. This may take in all or only some of the ducts.

5. The saliva can be secreted acid in the glands, because of a general acidosis and a tendency of all the secretions to be more or less acid. The acidity may be due, perhaps, to some abnormal action of the gland or to the decomposition of some easily hydrolyzed abnormal constituent of the saliva; the saliva then enters the mouth acid. This may take place in all or only some of the glands furnishing secretions for the mouth.

After a large number of most painstaking, time-consuming and ingenious experiments the writers conclude that "it is evident then that processes 1, 2, 3 and 4 cannot be greatly concerned in the formation of the acids found in the saliva of the individuals under investigation, that the saliva is probably secreted acid in the gland, and that bacteria has little or nothing to do with the acid production.

"The determination of the nature of these acids must be left to the future. Other methods for isolating and identifying these acids and their salts must be established."

A very ingenious method for isolating the saliva from the parotid gland was employed. A device like the ordinary medicine dropper, but specially drawn and containing a fine platinum tube, was introduced into Steno's duct, and the uncontaminated saliva collected before it entered the mouth. In each case the secretion thus obtained was acid, in one, more acid than the mixed saliva in the mouth. There is food for thought here for the prophylactists. If teeth are rendered sensitive at their necks, in consequence of an acid saliva being poured upon them, how can we expect to modify this by any amount of polishing?

(To be continued.)

GOLD INLAY WITH DOWEL *

By C. Jensen, D. D. S., Mt. Gilead, Ohio

We all know the strain and stress that is placed on a large contour filling, especially if it takes in the incisal edge, and we all have been unfortunate enough to have had more or less of our large contour inlays broken out, but by using a dowel it is impossible to break them out and the method is simple: devitalize and prepare canal for dowel, then prepare cavity same as for any ordinary cast inlay; place dowel in position; warm wax, place in cavity and shape up as desired, then withdraw dowel with wax model, invest and cast. When finished up you have an inlay that is impossible to break out.

SOME PRINCIPLES OF GOLD INLAY WORK *

By **H. J. Bosart**, Springfield, Ohio

The subject considered was, Some of the Principles of Gold Inlay Work Applied for the Obtaining of the Matrix for Porcelain.

The cavity was prepared, as usual, for inlays. For the matrix use 1:2000 platinum; first burnish it into cavity with wet cotton pellets, then burnish to the edges of the cavity with instruments, by the usual methods. Remove cotton, matrix remaining in cavity, then force into matrix a piece of inlay wax, as though taking impression of cavity, extending impression beyond margins as far as possible. This swages the thin matrix perfectly to the borders of the cavity. Chill wax and remove matrix from the cavity with it. Invest in any good, hard inlay investment material, boil out the wax and you have a matrix free from distortions and held in that way through the process of packing with body and baking.

*Given as a Clinic at Ohio State Dental Society, Dec., 1908.

ALVEOLITIS—THE DISEASE OF WHICH PYORRHEA ALVEOLARIS IS ONE STAGE

By **M. H. Fletcher**, D. D. S., M. D., Cincinnati, Ohio

(Continued from Page 209, March Summary.)

DISCUSSION CONTINUED

Dr. M. L. Rhein, New York City: It is a great pleasure for me to be able to meet with you here on this occasion. I have been very much interested in the discussion that has been taking place on this topic of so great interest in the dental world. I have listened to the essayist, Dr. Fletcher, who, I felt certain, had a thorough knowledge and grasp of everything that he was talking about, especially when he portrayed his practical results; I felt precisely the same way in reference to what Dr. Patterson said, as I knew that he was talking about the results of actual cases in practice, and I cannot say any less in regard to the remarks we have just listened to from Dr. Hartzell, who not only spoke directly to the heart of this question, but there was not a thing that he said that scientific objection could be taken thereto. When we consider the diversity of these three discussions and that all three seem to be at loggerheads with each other, there comes the remarkable fact, that we can take no exception to anything that each of these men said. It is like an Irish bull, a veritable paradox, but nevertheless true.

This is a very sad and very distressing commentary on the results of present dental education. When a few of the most prominent pathological conditions are laid aside, such as caries of the teeth, orthodontia, etc., everything else that comes to us for advice, treatment or consultation can be truly said to come under the head of the subject that has been discussed this afternoon. Nevertheless, the fact remains that the dental profession have been and are attempting to discuss these varieties of pathologic conditions as one disease. This is where the difficulty lies. Dr. Patterson has been talking all the afternoon about simple gingivitis. On the other hand, Dr. Fletcher has been discussing alveolitis, and gingivitis has had no place in his mind during the discussion. It is natural that when these two men have both been considering two entirely different types of tissue in a diseased condition, they would not agree. Had they agreed with each other, it would have been an evidence of dishonesty on the part of one of them.

There are not only two forms of diseases that vary and differ in every essential point that can legitimately come under the category of the discussion we have been listening to, but we can easily extend them to a hundred or two hundred, or even more. The symptoms in each of these varieties are bound to vary and necessarily the treatment in certain essentials ought to vary. I am simply trying to emphasize what Dr. Hartzell has so well said to you when he has agreed with both Dr. Fletcher and Dr. Patterson and yet at the same time has opposed them.

The time does not permit me to go into special etiologic conditions, but I cannot refrain from giving my endorsement to Dr. Hartzell's discussion, and especially what he said about tubercular alveolitis. I have made a few thousand original research experiments in tuberculosis and they have corresponded absolutely with everything Dr. Hartzell has said today, and consequently I must disagree with the essayist in what he calls his tubercular classification. There are cases of tubercular alveolitis, but I have never seen them but in such cases as Dr. Hartzell pointed out. It has frequently been my good fortune to be the first one to call the attention of a patient to the fact that he had incipient pulmonary tuberculosis. I have made the diagnosis entirely from the characteristic mouth symptoms, which only are present in tubercular alveolitis, or perhaps only in gingivitis. I have never failed to have such a diagnosis substantiated by physical examinations by a proper expert. One of our greatest tubercular experts in New York City, Dr. Alfred Meyer, put me under a test of this kind about two years ago in one of the prominent out-door institutions for tubercular cases. Twenty-five selected cases were brought before me and I made a diagnosis and prognosis in very rapid time, taking not more than forty minutes for all twenty-five, entirely from a mouth examination. It was purposely made very rapid so that I would not be influenced by anything but the appearances of the mouth. Among these were a couple of other diseases, placed, if possible, to catch me napping. I can only say that I immediately discovered them, they both being cases of valvular disease of the heart.

It is about time that the profession were able to properly classify the pathologic conditions of the gums and alveolus, according to their etiology. This is the only solution for intelligently considering diseases of this nature. It would then be impossible to misconstrue the condition that a man was talking about. We are all more or less familiar with the large classification the dermatologists use in speaking of affections of the skin. Our own work is so very similar that it would seem but natural that we would adopt a classification of this nature. I am sure if Dr. Patterson will, carefully, and without bias, consider what I have said, that he will revise some of the statements he has made in regard to the value of our knowledge of etiologic conditions. Malnutrition is the one great predisposing cause which produces interference in the nutrition of these dental areas. This malnutrition can come from any number of general diseases. The symptoms will vary and be similar to the allied symptoms of the disease which is the real etiologic factor, producing the malnutrition. In fact, it is only reasonable and logical to understand that in these forms in all kinds of malnutrition, the first symptoms that nature has departed from its normal condition, should appear in the parts which are nourished by the most ultimate capillaries. When a tree is blighted and nutrition interfered with, it is the outermost little bud which first dies and withers away. The same thing holds true to the human body. The capillary circulation which supplies the gums and alveolar tissues is by far the longest and furthest removed from the main trunks of the body. It is consequently only natural that here should be found the first symptoms of malnutrition. They are first found here, and the dentist, who understands this, is frequently enabled to first call his patient's attention to the insidious onset of some serious disorder.

Dr. J. G. Templeton, Pittsburg, Pa.: This is a subject that I have been interested in for many years. Many of the things that the essayist says I believe, but I do not agree with him that it is a bone disease. I believe emphatically what my friend,

Dr. Patterson, has said on the subject; I agree with all that Dr. Hartzell has said, and I think as a class of professional men, we should know and understand dermatology.

I think that I have read everything that has ever been published on the subject, and I have tried every remedy for the cure of this trouble that has been recommended, but I always come back to one thing, one thing that has done me more good than anything else. The first thing is to remove all deposits, and do it thoroughly. The remedy that I rely upon—I learned it in the Pennsylvania Hospital in Philadelphia, where so many cases were brought in while I was attending the medical college in that city—is a twenty per cent. solution of sulphate of copper, and I have never used anything that was so successful as this treatment.

There are a great many cases called pyorrhea that are not pyorrhea alveolaris. Then what is it? Gingivitis, or what Black calls calcific inflammation. Dr. Black has written the best treatise on the subject that I know of. He has not only written the best, but he has got the best illustrations.

I am relying upon sulphate of copper to cure this disease, and I am able to say that it can be cured. I think I have seen as many cases as anybody else. I know I have cured a great many.

Dr. Arnold, Chicago, Ill.: The first gentleman says surgery; the second says minor surgery; the third gentleman says scientific investigation; the fourth says nomenclature, then the next gentleman says medicine.

Well, what are we going to do? I want to deal with the coming, with the rising generation. We can prevent, we can save—I think it is acknowledged that we cannot stop this disease after it comes, but we can prevent ninety nine cases out of a hundred by following these diagrams that Dr. Fletcher gives us in regard to cleaning the teeth and keeping them clean.

Dr. J. P. Buckley, Chicago, Ill.: The hour is late, the audience is tired, and the conditions under which the discussors of the subject have spoken have been none too favorable; therefore, I shall detain you only for a few moments.

To say that I have listened to the reading of this paper with a great deal of pleasure and profit, is putting it mildly. Notwithstanding the intense heat and the bad atmosphere in the room, I have enjoyed the discussion very much.

Now, this paper can be divided into three parts—the nomenclature, the pathology and the treatment. We should study the pathology of this disease rather than try to find a name characteristic of the more prominent symptoms. It is one of the most distressing conditions with which the dentist is confronted.

I shall not discuss the pathology for the hour is late and I have nothing new to offer. We know very little about this disease, notwithstanding the fact that the best men in our profession have been engaged in studying its pathology. We know less about the real pathology of this disorder than any other pathologic condition associated with the mouth. Dr. Rhein is exactly right—he is usually right—but I do not agree with him this afternoon simply to be popular, but, because, in my judgment, his statements are correct. The greatest mistake that is made is the endeavor to throw all of the conditions into one class, and try to find one cause for the various conditions. We have conditions in the mouth where gingivitis is present and there are cases of pyorrhea where there is not the least evidence of gingivitis.

We now come to the treatment. I cannot restore all teeth affected with pyorrhea to their functional activity, and there is not a man in this room who can cure all cases of this disease regardless of the mouth in which it occurs. The treatment of this disease—whatever you want to call it—pyorrhea, alveolitis, etc., is simply this: Get the confidence of the patient. This is absolutely necessary. The thing that has been mentioned this afternoon as being the first thing to do in the treatment was to remove the deposits. Let me say that this is not the first thing to do in the treatment of this disorder. After the confidence of the patient is gained, the first thing to do is to extract right there at the time, without any hesitation, all of the hopelessly loose teeth,

and not do as the essayist did, treat these teeth for a number of weeks and then extract them, the thing he should have done at the very beginning. This is what discourages more patients than any other one thing—to carry a tooth or teeth along through a tedious treatment, and at the end have to do that which your better judgment should have directed you to do in the first place; and so in the treatment of this disease, the first thing to do is to extract all hopelessly loose teeth. This does not mean all *loose teeth*, but those which your experience should have taught are *hopelessly loose*.

The next thing is to station the remaining loose teeth in the jaw by means of some appliance—temporary or permanent—and then remove all of the deposits. After the deposits are removed, medicines can be employed. During the last ten years I have said about as much in the journals, concerning drugs and medicines, as any other one man in the profession; and I want to say now that I know of no pathologic condition wherein drugs are of so little value in the treatment as in the treatment of the disease under consideration.

If we will extract the hopelessly loose teeth, station the remaining loose ones in the jaw, remove all of the deposits, polish every exposed surface of those which remain, and teach our patients how to keep their teeth and mouths clean, we will find ourselves in a position to successfully combat this disease.

There are some cases where the teeth will never be satisfactory unless they are mechanically held by some permanent appliance; when this is necessary, except in rare cases, it is better to extract such teeth and insert artificial substitutes by means of bridge-work.

Dr. Fletcher, (closing the discussion): If I ever had occasion to be gratified, it is now, because if one starts for an end, and can accomplish it by getting such discussions and suggestions as we have had here today, it certainly is a matter of some comfort.

There is another thing that has come up, and it will be a great lesson to me, and that is this,—that even the English language does not convey one's ideas unless properly used. It is a well known fact that Lincoln went through eleven books of Euclid so that he could better convey his ideas to his hearers. I have never gone thoroughly through those books, therefore I cannot convey to my hearers what I would like to say.

At this late hour it is impossible to answer all of these questions, so with your permission, I will answer them later.

I have endeavored to show you how, from my viewpoint of pathology and histology, that removing the dead bone and other foreign bodies would be as necessary to recovery in this disease as it is in other parts of the body, but I am afraid I have not made it clear.

It may be that I am wrong about the tubercular infection, but the analogy is complete, and I want others to prove or disprove the theory, by doing better work than I.

Dr. Patterson says "I give the impression that it is primarily a bone disease, and then afterwards deny it myself." Then he quotes the very paragraphs which, if properly interpreted, indicate just the reverse. The paper must be taken as a whole, not one sentence against another.

The opening paragraphs of any thesis or proposition are statements of what is to be talked about, and the Doctor's first quotation is from this part of the paper.

His second quotation is from the "argument" or "discussion" and displays as plainly as I know how that the primary lesion, (please mark *primary lesion*, not *primary disease*), is in the soft tissues, and the quotation goes on to explain why this lesion exists before the bone becomes infected. The Doctor further says, "and he gives the bone as the seat of the primary infection." I think he will not find such an expression in the paper. In a felon the bone or periosteum is primarily the seat of the disease, but the *primary lesion* is in the soft tissues as in alveolitis. Again, in apoplexy the blood vessels are primarily the seat of the disease, not the brain substance. If the

Doctor will take into consideration the nouns which accompany the word "primary" in these paragraphs and the pathology which they describe, there could hardly be any misunderstanding about it, or such criticisms as he has made.

He further objects to my using the familiar illustration that "healing is prompt and complete when the tooth is out." He says, "This is not a scientific argument, but a practical one."

Science is knowledge of facts gained by systematic observation, and if the above statement about the teeth is not a scientific fact, I am sure I do not know what it is.

In the same paragraph he asks, "It would not do so if it were really a bone trouble, would it?"

I would here refer him to another scientific fact, as well known as the other, and relied upon by all surgeons, namely, that where dead bone is present, healing is never complete until it is removed. This applies just as truly to the bone about the teeth as it does to any other part of the body and he will only need to fully comprehend the recovery of the many cases we all know he has treated so successfully, to prove the truth of the statement.

The Doctor objects to my theory that "The twisting and extrusion of the teeth may be due to tuberculous infection" and accounts for it by saying "The investment of the tooth becomes distorted, or possibly the tooth is loosened from its strong attachment and becomes rotated and held in that position until the bone heals around it." This is a statement of what one can see has happened, but after saying "I can account for the twisting of the teeth very rationally" he does not make the least suggestion as to the cause of the happening. I should like the Doctor to ask himself the question, that if tuberculosis causes twisting and distortion of bones in other parts of the body, why it could not cause the same in the bones about the teeth.

Again, he says, "When he commences with the treatment he does not say a word about treating the constitutional, the systemic or anything about the treatment of bone disease."

As to the constitutional treatment, it is in this disease the same as in all surgical diseases of bone, excepting this is minor surgery and does not often create the general systemic disturbance that major operations do. If surgical fever arises, which it rarely does, treat it as such, or call in the family physician who can do so.

There is no question but that we should do what the Doctor says, namely, "If it is bone disease per se, then we should give attention to bone disease." Will the Doctor please answer himself the question, what his or any other one's D. D. S. means, if it does not indicate that, according to law, we are expected to be familiar with surgery about the teeth at least. Now, how many of us fulfill the standard the law requires? Let me ask right here how many of our Dental colleges prepare students to practice surgery to any degree, and yet all should be able to do this amount in order to do their patients justice.

Dr. Hartzell's remarks and criticisms are to the point, and if in the "clasping" of his proffered hand we could include the whole dental profession and its support, then we could say to the Carnegie Institute, we have selected from our midst a trained scientist and wish him, under your provisions, to work out the facts of the cause and treatment of this almost universal disease of the mouth. If we could do this I believe we would soon settle into the best and the most successful methods of its treatment.

This investigator, however, would need to be supported, not only by a small annual contribution from each one, but each investigator should contribute such items as Dr. Hartzell's experiments of inoculating and his idea that the "stump holes of the dead periodical fibres" is the greatest source of perpetuating the disease. Whether tubercular bacilli play any part in the bone disease or not, and what weight is to be given to faulty metabolism or other systemic disorders, as is advocated by Dr. Talbot. I

believe if we could do such a thing as this we would confer upon mankind a never ending benefit and do our profession great credit.

Dr. Hartzell's suggestion of osteoclasia in this disease is not entirely a new thought to me, but I have always associated osteoclasia with physiological processes and not with pathological, but I may be mistaken.

The Doctor further asks, "Can we not save teeth, etc., without surgically destroying more alveolar process with the bone bur?" Here I would refer him to the well known principles of surgery adopted in cutting away diseased and some healthy tissue in indolent ulcers, necrosed bone in other parts of the body, and the radical removal of tissue in removing new growths.

The paper itself has explained this to which I refer him. For instance, it is plainly stated that by the present prevailing methods, we unconsciously wound and remove tissue about the roots, and oftentimes in this way induce recovery when it otherwise would not occur.

The avoidance of "cutting away that which is needed to support the teeth," is a matter of the detail and skill of the operator. Works on surgery lay down the principles of the art and some of the practices as illustrations, and that is what the essayist in this instance endeavored to do. It is a foregone conclusion that a surgeon in such operations as opening the abdominal cavity or cutting into the axilla, knows that in the avoidance of the unnecessary destruction of healthy tissue lies the success of the operation to a great degree.

The Doctor asks "just what percentage of cases showed tubercular bacilli." The paper states that no satisfactory results were obtained, which means that no tubercular bacilli were found in the bone taken away. Making pure cultures from tubercular bone from any part of the body is a difficult task. He further asks, "Whether these individuals gave evidence of general tuberculosis?" To this I say no.

Either from lack of clearness in the paper, or from the popular idea that tuberculosis necessarily means lung disease, this part of the essay seems to have missed the mark.

Tuberculosis may thrive in bones or skin, or, in fact, in almost any tissue of the body, and yet not be found at all in the lungs. The analogy shown in many cases of alveolitis to that of tuberculosis of other bones prompted me to consider the question of tuberculosis of the alveolar process, but this would be a problem to be solved by our Carnegie Institute man.

I have been greatly interested in Dr. Rhein's remarks, and the best solution I can think of regarding this problem, is the one just made, namely, put the proper man at it, with proper environment, and support him until good results are obtained. This would settle many points in Etiology and Pathology and also give a proper nomenclature, and I would say this same thing to Dr. Templeton.

Dr. Buckley says, "The first thing to do, and do it without hesitation, is to begin to extract all of the hopelessly loose teeth." If the Doctor is able to tell in the beginning just what are hopelessly loose teeth and those that are not, he can do what no man I ever knew can do. It has been my observation that many teeth which seemed hopelessly loose are often made useful for years, and I think they are far superior to bridge work or plates. He further says, "Treating these teeth for weeks and months discourages more patients than anything else." I have not found it so, which would indicate that our clientele differ quite a good deal. I find many more persons begging me to continue treatment on what I consider hopelessly loose teeth, than I do those who ask to have them out, and I often find teeth getting better and useful, which I had at first condemned. Each one of our practices differs from the other, probably as much as the individuality of the operator differs from his neighbor.

The most practical and sensible thing is what Dr. Arnold has suggested, viz., the prevention by self prophylaxis. I do not rely upon prophylactic treatment in the office nearly as much as I do upon teaching patients how to care for their own teeth; teach

them what prophylaxis means and how to administer it to themselves; this is perfectly practicable, but I never yet have had a patient learn to clean the teeth properly inside of three months, and many take much longer, but I keep them coming back until they learn, or I find that they cannot learn, and if they cannot I have them return often enough to keep the disease in check. Teaching self treatment I consider of much more importance, especially to the young, than any service I have to offer my patients.

ROOT CANAL FILLING

By G. T. Smith, D. D. S., Beattyville, Ky.

When cases are presented in which the nerve must be destroyed, many different methods may be followed, but all aim at the same result: the best. Filling the apex of the root is like groping in the dark, and many abscesses follow failure at this point, the result of not getting the apex properly filled, or by forcing some of the filling material through the apex.

Take, for instance, the root-canals in molars, some of them so minute that it is impossible to enter the broach. Then we are up against a hard proposition.

For a long time I worked, and studied, and worried over these cases, and sometimes almost gave up in despair. Still I stuck to it, looking and studying constantly for something that could be done to overcome all this trouble and worry, and still be of great benefit to the patient; for what is more tiresome and painful for a patient than to sit for hours with his mouth propped open, while the search for the canals goes on, possibly to end in failure and additional pain.

I believe that I have at last found a way in which most of the pain, annoyance and risk to the patient, and practically all of the back-breaking work for the dentist may be avoided; at least, I have been practicing this method for several years, with the finest results. Have not had a single failure in several hundred cases.

When a case is presented in which the nerve must be devitalized, I apply the rubber dam, remove all carious matter, or as much as possible without causing too much pain; and then use pressure anesthesia. When all sensitiveness is gone, I enter the pulp chamber with a round, sharp bur, and remove all pulp.

After waiting until hemorrhage stops, I wash out the cavity with peroxide of hydrogen, dry it out thoroughly with hot air, and fill the pulp chamber full of Oxpara. Then I take a small piece of rubber and put it into the cavity, using a little pressure to be sure that the pulp-chamber is completely filled. Then cover with cement, and the tooth is ready to be filled.

"Oh," I think I hear someone say, "you haven't taken the nerve out of the canal!" No; and that's a job I expect never to do again. What can fill a root-canal better than Nature? Surely nothing possibly could.

"But you left that nerve in the canal, and you will soon have an abscess on your hands, and your work will all be to do over," says Mr. Objector. But it doesn't turn out that way. In my opinion, Oxpara will

preserve that nerve as long as the tooth lasts, provided the tooth is properly filled so that no moisture can get to it, and start disintegration.

What are the component parts of Oxpara? There's no secret about it. They are admirable for the purpose to which I claim they are entirely fitted.

Formaldehyde: One of the most efficient bacteriaicides on the market, and a fine disinfectant.

Thymol: Paralyzes the nerve in the canal. Is also a fine antiseptic and disinfectant, and is sometimes used to destroy the pulp in acute pulpitis.

Alum: Condenses the nerve-tissue by coagulating the albumen, and acts as an astringent.

Creosote: Has special sedative powers, and will allay any irritation that may arise.

These are all the properties combined in Oxpara, for the preparation of the finest permanent root-canal filling that possibly could be used. The nerve is kept in its canal in a perfect state of preservation, and, in my opinion, based upon years of experience, we have here the greatest of all root-canal fillings.

When I use arsenic for devitalizing, which is very seldom, I usually give the nerve one or two treatments of Oxpara before filling the tooth. I have had a few cases in which the patient complained of a slight pain in the tooth for a day or two, but it soon passes away, and that is the end of it.

When that eminent surgeon, Dr. McDowell, of Danville, Ky., first suggested to the medical profession that a diseased ovary could be removed, he was called a fool, his critics asserting that the patient surely would die. So confident were these people that death would follow his attempt that a howling mob was waiting to hang him when he came out of the operating room. With this staring him in the face, he performed the operation, and it was a success. In this way this brave man demonstrated to the world that the life of woman could be lengthened many years.

I expect to be criticised by some of the older practitioners, but all I ask is that each of them give Oxpara a trial for themselves. They are sure to be convinced. I claim that Oxpara, used in the simple manner described, will be the cause of extending the usefulness of many a tooth that otherwise would be lost.

CAST GOLD INLAY *

By F. M. Fulkerson, D. D. S., Sedalia, Mo..

My clinic consisted in making a cast gold inlay, using a cylindrical metal flask in which to invest the wax model: melting the gold in cone-shaped depression, in the investment, and forcing the gold into the mould with a porcelain cup filled with powdered fire-clay, mixed with water to about the consistency of putty.

*Clinic at Indiana State Dental Society, June, 1908.

EXCHANGE OF PRACTICAL IDEAS

A PRECAUTION IN EXTRACTING

By F. H. Skinner, D. D. S., Chicago, Ill.

When extracting a tooth or doing a surgical operation in the mouth, under a general anesthetic, just as the patient is fairly well under, put the finger on base of tongue, bring it forward and place a large roll of cotton, two or three inches long, across the base, just forward of the epiglottis; the tongue will not drop back and no blood or debris will get back of cotton. If the operation is a long one, change cotton as often as necessary by drawing one end of roll forward and passing fresh one into place. If this is done until patient has regained consciousness sufficiently to expectorate, no blood will trickle down the throat to be thrown up afterward, or worse still, get into the trachea to cause strangulation. Nor is there any danger of a tooth or root slipping out of the forceps and going down the throat thereby causing the operator to suddenly develop a case of nervous prostration.

SIMPLEST METHOD OF MAKING GOLD INLAYS FOR CERVICAL CAVITIES

By E. P. Blanchard, D. D. S., Portland, Me.

While not claiming to be the originator of this method, it has nevertheless served me a good purpose for the last eighteen months. We all know the horror our patients have of the rubber dam being placed on a tooth and the cervical clamp put on and the gum crowded back.

The method consists of burnishing platinum foil 1-1000 inch in thickness into the cavity. The cavity being prepared as for any inlay on the box-like plan, cut a piece of platinum foil so as to conform to the gum margin, the foil being pushed up under the gum as far as it will go. Roll small pellets of bibulous paper to proper size and with these press the foil into the cavity and burnish to all margins; remove the bibulous paper and note carefully if there are any holes in the platinum matrix. If any appear, they should be closed by placing a pellet of gold foil into the platinum matrix, while in the cavity, and pressing down to place with a pellet of bibulous paper. Your platinum matrix having been carefully made the next step is to take a piece of 24 k. gold solder, flux it, which is done by covering thoroughly with borax, and heating just enough to fuse the borax on the solder. Now proceed to cut small pieces of this solder and place in the matrix. Hold the matrix in the flame and melt the fluxed solder, which

will readily drop down to the bottom of cavity. Proceed in this way until cavity is filled. There will be no trouble about the gold flowing over the cavity if these directions are carefully followed. Trim off the platinum, partly finish the filling, place in cavity, burnish to all margins, and cement to place, as you would any inlay, and you will have a filling beautiful. This platinum matrix can be filled in less time than it takes to obtain a wax model of the same cavity.

HOW TO PREPARE MODELING COMPOUND FOR CARVING

By R. L. Hesser, Frankfort, Mo.

To prepare modeling compound for carving, in crown and bridge work, soften the compound and incorporate thoroughly with finely powdered graphite. Use plenty of graphite until the compound becomes black through and through. Roll into small sticks for future use. After fitting band to tooth in patient's mouth, soften a stick of the prepared compound over Bunsen burner, fill band full; have patient close the mouth, let the compound harden, remove and carve cusps. Fusible metal may be poured directly on compound prepared in this way, or if preferred, can be pressed into softened dental-lac and used with a Coates or other swager. This method gives a correct articulation and obviates the necessity of taking an impression.

TO STRENGTHEN A BRIDGE

By M. A. Gottlieb, New York, N. Y.

Posterior bridges with barrel crowns for abutments are subject to frequent breakage, the bridge body being detached from one of the abutments. To strengthen the crowns some solder a band of gold plate around them. A much better and easier way is as follows: Cut some 22-k. solder and form a band covering the whole surface facing the space for the dummies and about one-third the width of the remaining surfaces of the band of the crown. Prepare the band of the crown with borax and place the band of solder in position, and attach in a bunsen flame. As soon as the solder begins to flow remove from flame and strengthen the cusps with 18-k. solder. The whole procedure takes about two minutes and produces a nice contour on the crown requiring little finishing, and it acts as a starter at the final soldering, insuring a perfect joint between the facings and their abutments, which otherwise is often not the case.--*Dental Review*.

TO educate the wise man, the state exists; and with the appearance of the wise man the state expires. The appearance of character makes the state unnecessary. The wise man is the state. Emerson—Essay on Politics.

MISCELLANY

DENTISTRY IN 1958—A GLIMPSE INTO THE FUTURE

By F. B. Spooner, D. D. S., Brooklyn, New York

(Continued from page 220, March Summary.)

We next visited the operating department,—an immense hall, three hundred feet in length. Overhead was a glass roof, the lights being held together by a transparent material, giving a continuous effect that was most pleasing. Arranged in long rows were the operating chairs. They were not a mass of varnish and nickel, cruel to look at, for all the machinery was concealed. Movements were by a touch of the foot to delicate levers, releasing compressed air, turning the device to any desired angle.

Over each chair was a pendant cord with handpiece attached, similar to the Ritter engine, but there was no gallows arm, or foot pedal to actuate the movement. Taking it in my hand, I found the current was influenced by advancing and retracting a ring on the extremity, the fingers easily accomplishing this after a few trials. Lengthening of the cable was attained overhead by a simple expedient, as seen in gas fixtures or the collapsible gates of ferry houses and elevators. A delicate flexible tube followed the cable, terminating in a perforation near the bur. A stream of warm air was constant, driving all excavated material from the field of operations.

In this new style of chair, the ordinary was changed to anesthetic position by a movement of the foot, accompanied by a slight hiss of escaping air. Nearly on a level with the face was a reflector that threw the sun light. It was gathered in a ray which illuminated the cavity, and could be changed as the rotation of the earth made necessary. I saw no improvement for night work, as people were not forced by *extremity* and toil to need such service.

Compressed air did all that was possible. The floor was absolutely free from dust. I observed a piece of cotton dropped, and as though by magic it drifted to the side of the room. At regular intervals, there was a sound as of a great sigh, which startled me; I learned that an exhaust carried all dust down to a furnace in the cellar.

The students wore white coats, the classes being distinguished by the color of the trimming.

A very pretty etiquette prevailed; each man was expected to make room for his superior, and not a rude rush for better place in the lectures. There was more dignity in all matters; less haste, as if the world had

learned the folly of a feverish scramble, and grown wiser, as well as richer and happier.

Gradually I lost the habit of shaking hands, adopting the custom of folding them over my breast, and learned it was not right to raise my hat, which has as much significance as to stand on one leg, the latter being less injurious than the former on a windy day.

Leaving this hall, I was given in charge to a director of the mechanical section. A student was taking an impression of the mouth for an upper set. The Director explained that Steno's duet was first inhibited—by means I will later describe—the arch covered with a material analogous to plumbago; then wires were brought into contact, and the battery started. I saw the material change its color, taking the gold precipitated directly on the conducting material. In ten minutes all was done, and titrated from its attachment. The plate was now invested, and the teeth tacked on temporarily by long prolongations in the platinum pins. This was done with an electric iron, which disintegrated the solder at a touch. In an incredible time the teeth were again tried in the mouth, and pressed to position, the long pins allowing flexible movement. The patient bit on the structure, and occlusion was absolute, for the teeth remained where fixed by the natural movement of the jaw. Gold—called *plasticauro*—was smeared in the right place with a spatula, and the heat again applied. Porcelain body was added, and a grand piece of work completed in less than two hours.

As the gold cost next to nothing, and the teeth ten cents, it was easy to see the price to the college, yet I heard the patient was taxed five dollars. This reminded me of certain notices on the walls:

<p>“WORK IS DONE BY STUDENTS. A SMALL CHARGE MADE TO COVER COST OF MATERIAL.”</p>

“How long did it take you to make such a plate?” I was questioned.

“I never tried,” I responded. It was given to an expert, who asked fifty, or sixty dollars, and I got all the patient would stand: for such was only used by people with taste, and riches; the combination being rare, price was the same.

I wish to say at this point, that I do not speak of costs of material to disparage those from whom I received so much kindness, but venture to make manifest that though Socialism had improved the world, human nature remained as when I labored for nothing in the morning, and listened to *ethics* in the afternoon.

While waiting for a portion of the plate to cool, I picked up a text book and read

“The earth was originally a mass of vapor. In the ages, solids gravitated to what is now our equator. A great upheaval induced perturbation,

causing the earth billions of years ago to change its rotation. The gold moved to the poles during the molten state, in consequence of the sun's attraction, and diminished velocity.

Gold was treated by a new process discovered in 1932, by Ottotogue of the Manila university. The molecules were separated by the Solaris ray, under which the metal became plastic, and even liquid. The attraction of cohesion induced the natural state to take place in an hour, but was attended by a slight shrinkage. For some time it was used for filling teeth, totally supplanting amalgam and porcelain inlays, which had their origin in 1907.

The cavity was lined with cement, and then plastic-auro—the name given the substance—introduced as an alloy filling. Change was later overcome by mixing granulated gold with the plastic-auro, which broke up the lines of shrinkage.

Beltel, of Columbus, Ohio, in 1934, announced a similar way for disintegrating porcelain. It was placed in the cavity like putty, after first lining with coal tar, and the edges burnished to adaptation. Under friction the molecules took position and the *ideal* filling for front teeth was reached, although gold still found favor where there was occlusion in mastication."

The Director having absented himself, I spoke to the student, who was a dull looking youth with thick lips, and his neck creasing above his collar, yet wiser than all the brilliant men of my time.

"What is this Solaris ray?"

He thumbed over a book, leaving moist marks on each leaf, and silently handed me the passage—

THE SOLARIS RAY

was discovered by Dr. McCutcheon, of Brooklyn, N. Y., in 1929. Theorizing that all energy was derived from the sun, he experimented with a series of focusing glasses to concentrate the rays on one point from a great area. This energy, derived from limitless resources, was analagous to *radium*, in that its potentiality could be confined in small space. A reservoir the size of a brick was computed to have enough dynamic power to run a battleship around the earth thirteen times. Search lights carried on steamers, dissipated fogs for three thousand yards in all directions, making collisions unknown from this cause. Steam was laid with other old mediums. A tobacco box held force which was fed directly into the cylinders of an ocean steamship, and the passage from New York to Liverpool took eighteen hours.

In 1942, a fanatic placed a quantity in a disused mine. It lifted three square miles of territory; killed one thousand people, and half of Pittsburg had to be rebuilt.

The shock was felt in the Russian Republic, and so much glass was destroyed that the Government made it a penal offense to sell this explosive, with the same punishment as to drink whiskey, or fail to have a child's teeth examined every three months.

Sad to relate, the discoverer fell a victim to his temerity in conducting experiments. An accident happened and he was consumed. A monument stands to his honor in Brooklyn, N. Y. It is of colossal size and around its head plays ever a stream of light, fed from a reservoir in the pedestal. It cost thirty thousand dollars, being erected by the Odontists of the world.

A protest was started by the physicians, that a man who was *only* a dentist practicing under the old law—should be so honored while they were not represented. But this disgusting jealousy came to naught, as the city fathers decided that the halo lighted the square; and the base made a convenient location for nurses and children to sit; hence this trivial assault on the brotherhood of man met with discomfiture. I mention this foolish cabal, as it was the cause of a law requiring the degree of M. D. to first precede that of M. D. O. Thus was ended that much agitated subject, whether dentistry was a common mechanical art, or a true twin of surgery, about which there seems no doubt, as all parts of the anatomy are of equal importance, if they contribute to the same extent to happiness, for who would not sooner lose a leg than the *Corpus Spongiosum*?

In the extracting room, two polished knobs of metal were placed against the temples. After a few attempts the *Ampliar-beam* affected the Gasserian Ganglion, the higher vibratory action of the beam, neutralizing the nerve impulse. I perceived that the student placed his forceps under a spray of water with no effort to sterilize. I was instructed that the metal cabinet was in contact with a current, which, while scarcely noticeable to the cuitele, destroyed the delicate organisms with certainty.

After extraction, a hollow sterilized capsule was placed in the socket. This encouraged granulation over the artificial material and the formation of fresh tissue, overcoming absorption in a very happy manner.

The inventor of this preventive for hollow jaws obtained a patent, upon which he was thrown out of his Society, and one hundred thousand dollars subscribed to defeat his claim. His un-ethical conduct was punished by defeat, the courts holding his patent not novel. Cotton is often placed in a tooth socket, and if left *long enough*, might, though doubtful, have similar results. He was allowed to patent the shape of his capsule, and its hollow character only. But the parasites got them out solid and made the design square—which answered just as well—so the unfortunate benefactor to dentistry died in a lunatic asylum.

The fate of this illustrious man filled me with grief, calling to my mind the experience of Dr. Taggart, who first made known his thought to cast gold inlays. At the time I passed away he was striving to defend his rights, with small chance of success, owing to the folly of patent law, which does not give protection to an idea, but to the common mechanical way it is carried out.

If a small matter can be mentioned with such a great thought as the above, I will relate my own experience with a pad I invented for mixing cement, in place of the *glass* commonly employed. The Patent office saw no

novelty in the *idea*, but could only see a pad, stating that such were used to write upon. It was explained that the difference was its being bound on four sides; was made of material totally different, and that the one was absolutely useless for the purposes of *the other*.

But the office ignored *use, utility or adaptation*.

In 1930, a genius perfected a hyperdermic syringe, which, acting with the Solaris ray, injected the serum of a clam into the maxillae, to produce a new tooth. This (certainly strange departure) was gravely thrown out as Indians used sharp pointed arrows, by which they fired matter through the system. In fact, the Patent office grew so top heavy, that when a tidal wave in 1945 reduced Washington to its original swamp, this monument to blasted hopes was covered with mud, and when erected in Colorado the laws were changed, and a patent not granted on the *way* which might have a hundred varieties—but on the soul more important than the body.

In 1958 had been long exploded that it was un-ethical for a professional man to protect a means of relieving human suffering. A dentist might *suffer* in researches for the bacillus of caries; it would be a grand return to give him a tablet after death, made from dollar subscriptions, given by the thousands of dentists who had made millions. Such a discoverer might well illustrate the story of the poor Parson who asked the Trustee for a raise of salary so he could keep his soul pinned to his body.

"More money," said the business man. "I thought you preached for souls?"

"True," answered the Minister, "but I can't eat souls, and if I could it would take a thousand the size of yours for a good meal."

(*To be continued.*)

THE SUBSCRIPTION LIST OF THE DENTISTS' MAGAZINE, FORMERLY PRINTED AT CLEVELAND, OHIO, HAS BEEN PURCHASED BY US, AND WILL BE MERGED WITH THAT OF THE DENTAL SUMMARY, WHICH WILL BE MAILED TO ALL SUBSCRIBERS DURING THE TERM FOR WHICH THEY HAVE PAID. IN CASE YOU ARE A SUBSCRIBER TO BOTH MAGAZINES, YOUR PAID-UP SUBSCRIPTION PERIOD WILL BE ADVANCED TO COVER BOTH SUBSCRIPTIONS.

THE RANSOM & RANDOLPH CO.

PUBLISHERS

THE DENTAL SUMMARY

CLEVELAND, OHIO

TOLEDO, OHIO

GRAND RAPIDS, MICH.

EDITORIAL

FLOWERS FOR THE LIVING

WHEN we consider the many complimentary banquets tendered prominent and worthy dentists, by their professional friends, during the past few years, we are reminded of the saying of Sydney Smith, that: "Life is to be fortified by many friendships. -To love and be loved is the greatest happiness of existence."

We are glad to see this awakening on the part of the dental profession to honor those to whom honor is due, while they are still with us.

A greeting smile, a fraternal shake of the hand, and an expression of good cheer from the heart, to a living friend, are sweeter by a thousand fold than the fairest lilies that ever lined the bier of man.

And members of the dental profession are to be congratulated on having known personally these men we honor.

Men whose interest has been not in self alone, but in their fellow men.

Men whose aim was always to make men better dentists, broader minded, and lift them step by step to higher planes.

Men who have been progressive and living exponents of the best and noblest in dentistry.

Such are the men that have been honored in the past, and such the man, Dr. Charles R. Butler, of Cleveland, honored by the Cleveland dentists on March 11th, in commemoration of his fifty-fourth year of continuous dental practice.

What can be more fitting than a social meeting with such men?

It strengthens the ties of friendship; it stimulates a deeper love for our chosen profession, and it makes one feel that life is worth living, especially by right living.

Let there be more of these complimentary gatherings. They bring pleasure to those who do the honoring, and gratification to those who are honored.

Moliere truthfully said: "The most agreeable recompense which we can receive for things which we have done is to see them known, to have them applauded with praises which honor us."

Life is all too short at best, and if we can make it brighter, cheerier, and better by strewing flowers along the way, in honor of our fellow men, it should become a regular custom.

The sweet remembrance would be with us always and the fragrance,
like an earnest prayer, be wafted to we know not where.

Flowers for the living,
And joy they bring.
Defer them not, till
Drawn the veil of mystery
That shrouds the present,
And screens the future state of man.

MEN YOU KNOW

THE "DEPOT MAN"

Here he is! the man you've been looking for.
Sharpen a prod; get a crowbar, buck-saw, or javelin.
Any old weapon will do for the "Dental Depot Man."
Collect your cuss words and prepare to explode, for he's coming this way.

He just paid \$25.00 into the treasury of the society and subscribed liberally to a memorial fund.

Hit him a clip before he passes!

His exhibits have brought many dentists to the meeting.

Give him a slap!

When dentists want special donations they go to the Depot man, for they know that he is ever willing and ready to respond to a good cause.

Prod him again!

Oh! Oh! See what a profit he makes! 25 per cent. or 30 per cent. on his sales and he has only \$100,000.00 or \$150,000.00 tied up in stock, on which he pays taxes, and insurance, and rent for a store, and salaries to employees, and has a thousand and one little expenses to meet, besides losing the interest on his investment.

But, 25 per cent.—Whew! If the dentist could only make—well, perhaps we better not say anything about the dentist's per cent.

Twenty-five or thirty per cent. did you say? Well, did you ever!

Lambaste him!

And he expends thousands of dollars in experiments, striving to obtain improved instruments and appliances that will facilitate the dentists' labor.

Give him an upper cut!

Don't use his instruments—make your own—or, get along without instruments.

He publishes a dental journal that is not an independent journal. Don't read the excellent articles it contains; be ignorant.

And he dares to advertise in his own journal. How shocking!

Carom on his proboscis!

Don't read his ads; for you are liable to find something advertised that will lessen your work or make your operations more perfect.

Has he ever accommodated you? Get out and howl, whether you remember or not. If you find that he has not, howl some more; and if you find that he has, howl anyway. It may make him more cautious in the future.

Scarcely a month but that he extends credit for the accommodation of someone.

Hit him again!

Every year he helps some poor, but worthy young dentists, to make a start, by supplying them with outfits and carrying their credit. Otherwise they might be years in getting an office of their own.

Maul him some more!

He is too busy with his own business to meddle with yours.

Hit him—But hold! Hit him for what?

Because he materially increases the finances of your dental society? You shake your head.

Because he strives to make everything that dentists need? No?

Because he brings out many an instrument or invention that is of inestimable value to the progressive dentist? No?

Because he accommodates you in time of need? No?

Because he is philanthropic? No?

Then punch him good, on general principles, for being a "Depot man."

ANOTHER SERIES OF VALUABLE ARTICLES

ANOTHER treat is in store for our readers. In our next issue we will begin the publication of a valuable series of articles on "Surgery of Diseases and Deformities of the Mouth," by Dr. G. V. I. Brown, of Milwaukee, Professor of Pathology and Oral Surgeon in the Dental Department, University of Iowa.

The Dental Summary and its readers are to be congratulated on the securing of these articles from the pen of Dr. Brown, who enjoys an international reputation as an oral surgeon.

It is the author's intention to pay particular attention to the practical side of surgery, in these contributions, and to point out what pathological conditions the dentist should, and those he should not attempt to treat.

He will also show how intimately the teeth and other tissues of the mouth are associated with diseased conditions in other parts of the human body.

He will teach the reader how to diagnose different pathological conditions in the mouth and show the importance of early diagnosis.

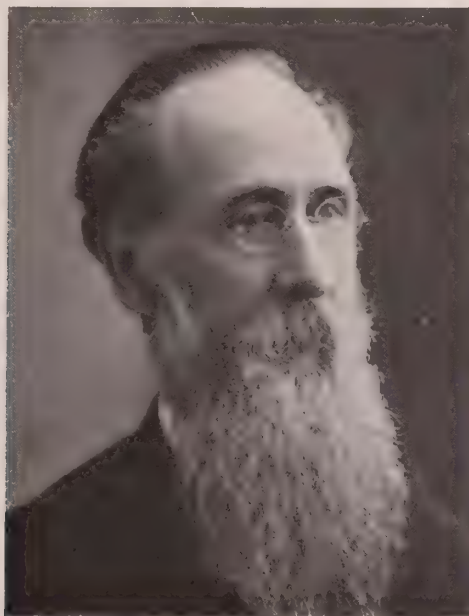
Dentists as a rule have not had enough instruction along these lines, and the articles should prove most helpful to every practitioner.

In these days of advanced dentistry, every dentist should be able to detect any abnormal condition of the tissues of the mouth and to recognize it in its incipency.

Many a life has been lost through failure to recognize malignant growths in the oral cavity before it was too late to eradicate the disease.

The dentist has a great responsibility resting on him in the proper oversight of patients, and in the series of articles to be published, Dr. Brown will carefully consider everything the dentist should know regarding abnormal growths and other pathological conditions of the mouth and point out where and when surgical interference is indicated.

The instruction furnished will be of great value to every dental practitioner.



Dr. Charles R. Butler

COMPLIMENTARY BANQUET TO DR. CHARLES R. BUTLER

THE dentists of Cleveland, Ohio, tendered a complimentary banquet to Dr. Charles R. Butler, on the evening of March 11th, 1909, in commemoration of his fifty-fourth year of continuous dental practice in Cleveland. Dentists, some from various cities in Ohio and from other states, to the number of about one hundred, were present.

The tables at the Hotel Hollenden were beautifully decorated with flowers, and the repast all that one could desire.

Dr. W. T. Jackman acted as toastmaster for the occasion and the following toasts furnished the program:

"Dr. Butler and the National Dental Association," Dr. Chas. S. Butler, Buffalo, N. Y.; "Dr. Butler and the Ohio State Dental Society," Dr. H. C. Brown, Columbus, O.; "Dr. Butler and the Northern Ohio Dental Association," Dr. L. L. Barber, Toledo;

"Dr. Butler and the Cleveland Dental Society," Dr. I. W. Brown, Cleveland, O.; "Dr. Butler and the State Board of Dental Examiners," Dr. J. A. Libbey, Pittsburg, Pa.; "Dr. Butler and Dental Education," Dr. N. S. Hoff, Ann Arbor, Mich.; "Dr. Butler and Dental Literature," Dr. L. P. Bethel, Columbus, O.; "Dr. Butler and Dental Inventions," Dr. H. L. Amblar, Cleveland, O.; "Dr. Butler and His Friends," Dr. W. H. Whitslar, Cleveland, O.; "The Dental Profession as I Have Known It," Dr. Chas. R. Butler, Cleveland, O.

Additional remarks were made by Dr. G. H. Wilson, Cleveland; Dr. Henry Barnes, Cleveland; Dr. J. R. Owens, Cleveland; Dr. J. R. Bell, Cleveland; Dr. H. F. Harvey, Cleveland; Dr. Corydon Palmer, Warren; Dr. W. G. Ebersole, Cleveland; Dr. W. H. Whitslar, Cleveland.

Dr. Butler was presented with a beautiful upholstered chair, and proclaimed "Dean of the Dental Profession of Northern Ohio."

The evening was a most enjoyable one and will be long remembered by all who were present.

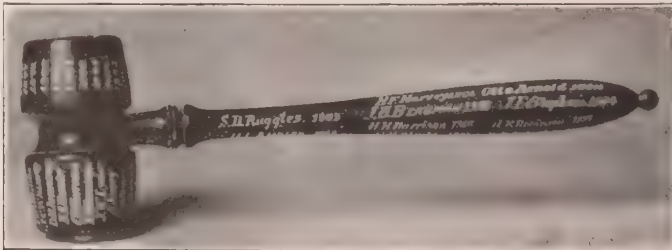
BRIEF SKETCH OF DR. BUTLER'S DENTAL CAREER.

Dr. Butler when quite young began the study of dentistry and medicine as a student of Dr. M. L. Wright, of Cleveland, Ohio. After three years of pupilage and practice, he was fortunate in being taken up by that enthusiastic and incomparable teacher, Dr. W. H. Atkinson, who fathered him as a student, assistant and partner. Dr. Butler became known the country over as "Charlie," sometimes "Charlie Butler."

He graduated by course from the old Pennsylvania College of Dental Surgery, in 1858, and continuing the study of medicine, graduated by course, from the old Cleveland Medical College in 1865. He was taken by Dr. Elisha Sterling as an assistant in general surgery, becoming as well coached in the technique of general surgery as in dentistry, in which he has for many years ranked with the most skillful operators in the dental profession. He has always been a leading spirit in dental society and educational work, being today as active as many of our younger men.

He was one of the charter members of the Ohio State Dental Society, organized in 1866, and is one of three, only, who are still living.

We all have hobbies. Dr. Butler's is being a lover of fine gems, and an expert judge of them.



This is a small picture of a gavel Dr. Butler presented to the Ohio State Dental Society the year following his presidency, 1876. It has engraved on it the names of all the Society's presidents from its organization in 1866 to the present time.

CORRESPONDENCE

MIXING SLABS FOR CEMENT

AN ARTICLE by Dr. Brady of Kansas City, is going the rounds of the magazines (See January Dental Summary, page 65), and as nearly half of it is to condemn my device, I beg permission for a reply, especially as he makes a charge of absolute *misrepresentation*.

The Doctor's instructions as to mixing cement are very good, but he warns not to mix on a paper slab, as "the paraffine wax of the paper will mix with the cement, no matter what the manufacturer says about his paper being absolutely impervious."

Now, I will give Dr. Brady five dollars for his pad if he can get the phosphoric acid through one sheet in twenty-four hours, so as to injure the next sheet, and will give him six months to get the powder, or mix to penetrate, in **same way**.

Now let us be honest (as I think the Doctor is), and in line with this will say, I do not fancy he ever tested it. He probably scratched on the surface and *theorized*, that the wax would come off if dug at.

Now, what of it? Let us take the worst way a man can act, and see what would happen. He takes a sharp edged metal spatula, and scrapes the paper, getting a minute particle of paraffine, or cotton fibre about one-thousandth of the mass. There is only one place in the filling where it can do any practical harm. That is on the surface, at the junction of the enamel where it makes a microscopical depression. And on this rare combination of untoward events hangs his *warning*.

How does it act where a man mixes as he should, and I think most do, as there has been enough instruction? Take a spatula (bone preferred) and mix with the flat edge, gradually coaxing the cement into the acid. Mix thick as honey—don't grind with main strength (which a glass encourages) after crystalization has started.

There is a psychological moment to stop—if you keep on forcing powder, you don't get uniform saturation. It is common sense, if you will stop and think, for you are choking it, when you go on forcing matters. You lessen adhesion, and make it spongy and brittle.

At the moment of writing this I took a pad, and with a sharp spatula rudely scratched the surface. I got as much fuzz as would blind a fly. I took a dull spatula, and succeeded only in polishing the surface.

TRY it!

You certainly get a clean surface when you use a paper pad (which

is what Dr. Brady directs; and this is a great point. It is dry—no old mixes on surfaces—the sheet can be torn off saving effort.

In 1836, an ancestor with a terrible name (Shearsjasbub Spooner) gave a *terrible* thing, Arsenic, to the profession. We are using it still and the pad may live, for what saves toil, lengthens life, and pads will live when Dr. Brady and I are sleeping under the daisies. For a *good* thing must live and not die like Cataphoresis.

Every new thing has to struggle for existence. Amalgam was condemned, but the critics are dead, and alloy will live a thousand years. There is as much chance of paraffine getting into the cement, as for mercury impregnating the saliva. Yet men, as wise as Dr. Brady, solemnly sounded a warning of Pyorrhea Diarrhea and Rheumatism.

There is one sure thing, the paraffine will not get into the blood, as they once said of those who introduced Arsenic and Amalgam.

Brooklyn, N. Y.

F. B. SPOONER.

INSTRUMENTAL ABUSE OF GUMS

By E. MaWhinney

I want to throw out a word of caution on the subject of prophylactic treatment of the teeth, and that relates to the danger of destroying the normal function of the so-called gingival organ. I wonder if we all realize when we scrape around the necks of teeth that the most important point of attachment of the periodontal membrane is the exact gingival margin, the first few fibers which unite the teeth to the gum tissue through the pericementum, and that the moment we destroy these first few fibers we provide a place for the lodgment of mucous secretions and favor the onset of pyorrhea. I have stood by and watched men using scalers to clean the necks of the teeth, and at the same time they were looking all around the room, while the blood was running freely from gums in which there was no inflammation at all.—*Record*.

IT is easy in the world to live after the world's opinions;
it is easy in solitude to live after our own; but the Great
Man is he who in the midst of the crowd keeps with perfect
sweetness the independence of solitude.—Emerson.

OBITUARY

A. W. HARLAN, M.D., D.D.S.

No greater shock has come to the ears of Greater New York dentists than the announcement that Dr. A. W. Harlan, aged 58 years, died suddenly from a surgical operation Saturday, March 6th, and the echo will follow throughout the ranks of dentists, both in this country and Europe. In fact, Dr. Harlan has, by his forceful professional life, made his name and professional repute universal among dentists, largely, doubtless, by his displayed editorial ability. The *Dental Review*, we trust, will stand indefinitely as a monument to his success in the lines of dental journalism. "The best evidence of success is success."

Alison W. Harlan was born in Julietta, Harlan County, Indiana, November 15, 1850. Attended the district school and later entered the office of Drs. Kilgore & Helms, Indianapolis, as a student. Coming to Chicago in January, 1869, he began the practice of dentistry in Illinois, working for Dr. Bell, and a little later was associated with Dr. Baker. In 1870 he opened an office of his own and during that year was married to Bessie Muirson, of Indiana.

In March, 1879, he graduated from the Ohio Dental College of Cincinnati. In urging the passage of a law regulating the practice of dentistry in Illinois he was among the foremost. When, in 1882, such a law became operative, he was one of the appointees on the first board, and again in 1895 was reappointed by another governor of the state. In November, 1883, the Odontological Society of Chicago was organized under his direction, and through that body a dozen or more kindred societies were established.

Dr. Harlan's official repute has been made throughout our national and international bodies, largely to his credit. Just prior to his death he had been giving much attention to the International Dental meeting to be held this summer in Berlin, Germany. He had what would be termed a liberal education, and with his hands made practical demonstrations of its benefits.

Our acquaintance with the doctor, as a New York correspondent for

NOTE.—The particulars of Dr. Harlan's death I will give in brief: The doctor was on a visit to Massachusetts, and in taking a bath in a porcelain tub, he slipped and struck his abdomen on the side and produced a rupture. Coming home he took cold and pain began to be manifested and an operation was advised. This was made Friday afternoon, it being a tedious operation and severe, of four hours' duration. The surgeon found associated in the case an advanced diabetes, and some other complications, which made the prognosis less favorable. Twenty-four hours after the operation the patient went into a comatose state and passed away.

a term of years, made us more than ordinarily to know him along lines that do not occur from merely meeting one during association meetings, here and there. These have been along purely professional lines. We never had long talks, for he was non-committal, but one found out where he stood by simply waiting. He displayed energies in connection with both the famous Columbian World's Fair and the success of the Dental Congress allied to it, that fairly and proudly won his spurs, and the full publication of the letters and proceedings was a feather in his cap. As a successful business practitioner, there can be no doubt. First, securing a large following in Chicago and then leaving it in the hands of those he had brought up to his high standard of skill, to the amazement of many he took the bit—as it were—between his teeth and went to New York City. One could almost hear the long breath that gasped “Why, I did not think Harlan would ever come to New York to practice.” But he did, and he was successful. To our observation his following was of not a few of the large financiers, viz., multi-millionaires, they are termed. His pleasing personality, together with his attainments gained through foreign travel, and a wide acquaintance with the world and people in general, no doubt were elements that contributed to his professional success.

For many years we have come to believe and hear it said, that Dr. Harlan was one of the best all-round dentists in the west. At the time of leaving Chicago for New York, not a few said, “It takes courage to do what he has done.”

When we read the announcement of the sudden termination of his life a shock thrilled us as nothing has, since the passing of that mighty soul, Dr. W. H. Atkinson. Dr. Harlan was an ardent and appreciative believer in Dr. Atkinson as a teacher, both to him and to his profession.

We attended the funeral services of Dr. Harlan at the “Little Church Around the Corner,” so well known to the public. The services were deeply impressive, as always the Episcopal services are. There were some forty dentists present and other friends. To us we had a proof of that Scriptural truth, “It is better to go to the house of mourning than to the house of feasting.”

The departure of those that we have known, and so many lives suddenly terminated of late, reminds us of the Scriptural warning, “Be ye also ready, for in such an hour as ye know not, the Son of man cometh.”

DR. G. ALDEN MILLS, New York City.

PENNSYLVANIA BOARD OF DENTAL EXAMINERS

The Pennsylvania Board of Dental Examiners will conduct examinations simultaneously in Philadelphia and Pittsburg, June 9, 10, 11, and 12, 1909. For application papers, or any other information, write to Dr. Nathan C. Schaeffer, Secretary, Dental Council, Harrisburg, Pa.

W. D. DELONG, Secretary.

SOCIETY ANNOUNCEMENTS

ALUMNI ASSOCIATION ST. LOUIS DENTAL COLLEGE

The Alumni Association of the St. Louis Dental College (formerly Marion-Sims), will hold their annual clinic at the college building, Grand avenue and Caroline street, on Thursday and Friday, May 20 and 21, 1909. An excellent program is being prepared, special attention being given to the clinical program. The annual banquet will be held on Thursday night, May 20, and the election of officers for the ensuing year will take place after the clinics the following day. All ethical members of the profession are cordially invited to be present.—Doctor S. T. McMillin, President; Doctor John B. O'Brien, Chairman Publicity Committee, 5761a Etzel Avenue.

MASSACHUSETTS DENTAL SOCIETY

The next annual meeting of this Society will be held in Boston, Mass., commencing Wednesday, June 9th, and continuing the 10th and 11th. A good meeting is assured.
C. W. RODGERS, Secretary.

CENTRAL MICHIGAN DENTAL SOCIETY

Central Michigan Dental Society (Sixth District) will hold its annual meeting in Lansing, Friday, April 30, at Hotel Downey. This will be a one day session and will begin promptly at 11 a. m. The program committee is preparing a short and interesting program, consisting of one or two papers to be discussed, and to be followed by table clinics, showing the very latest ideas in dentistry. A banquet at 6 p. m. will close the session. All ethical members of the profession are cordially invited.—N. H. Moore, Secretary.

FIFTH INTERNATIONAL DENTAL CONGRESS, BERLIN, GERMANY, AUGUST 23-28, 1909

The Fifth International Dental Congress will be held in the Reichstagsgebäude (Houses of Parliament).

The Hon. President of the congress is Geheimrat Prof. Dr. Waldeyer, director of the First Anatomical Institute.

Honorary members—Dr. Naumann, chief of the Medical Department of the Kultusministerium; Geheimrat Prof. Dr. Kirchner.

The business of the congress is conducted by the following committees:

1. Committee on Organization.
2. Berlin Local Committee.
3. Chairmen of the different Sections.

(1) COMMITTEE ON ORGANIZATION.

The Committee on Organization consists of fifteen members.

President—Privy Councillor Prof. Dr. Walkhoff, München, Briennerstr 47.

Vice-presidents—Prof. Dieck, M.D., Berlin, Potsdamerstr. 113. Prof. Hahl, Berlin, Lützowstr. 53. Hielscher, Coln o. Rh., Hohenzollernring 30.

Secretary-general—Schaeffer-Stuckert, D.D.S., Frankfort a. M., Kettenhofweg 29.

Secretary—Konrad Cohn, M.D., Berlin, Potsdamerstr 46.

Treasurer—Blume, Berlin W., Unter den Linden. 41.

(2) BERLIN LOCAL COMMITTEE.

The Berlin Local Committee is composed of thirty-eight members.

Presidents—Professor Guttman, court dentist, Potsdam. Robert Richter, D.D.S., Berlin, Victoriast. 23. Dr. P. Ritter, Berlin, Königgrätzerstr. 94.

Secretaries—Weidmann, Berlin, Bülowstr. 1. Gutmann, Berlin, Alexanderstr. 71. Pursche, Berlin, Rankestr. 30.

Treasurer—Helm, Charlottenburg, Berlinerstr. 169a.

(3) CHAIRMEN OF THE SECTIONS.

The following twelve sections have been formed, all of which can hold sessions in the Reichstag building simultaneously:

Section I. Anatomy, Physiology, Histology. Chairman, Dr. Adloft in Königsberg i. Pr., Weissgerberstr. 6-7.

Section II: Pathology and Bacteriology. Chairman, Prof. Dr. Römer, Strassburg i. E.

Section III: Chemistry, Physics and Metallurgy. Chairman, C. Birgfeld, Hamburg, Alsterdamm 1.

Section IV: Diagnosis and Special Therapeutics; Materia Medica. Chairman, Prof. Dr. Michel, Würzburg.

Section V: Oral Surgery and Surgical Prosthesis. Chairman, Geheimrat Prof. Dr. Partsch, Breslau; Prof. Dr. Schröder, Berlin.

Section VI: General and Local Anesthesia. Chairman, University Lecturer Dr. Fischer, Greifswald.

Section VII: Operative Dentistry. Chairman, Prof. Dr. Sachs, Berlin, Kurfürstendamm. 247.

Section VIII: Prosthetic Dentistry, including Crown and Bridge Work; Ceramics. Chairman, Prof. Dr. Riegner, Breslau.

Section IX: Orthodontia. Chairman, Heydenhauss, M.D., Berlin, Potsdamerstr. 121.

Section X: Hygiene of the Mouth and Teeth. Chairman, Dr. C. Röse, Dresden.

Section XI: Education and Legislation. Chairman, Dr. Ritter, Berlin, Königgrätzerstr. 94.

Section XII: History and Literature. Chairman, Hoffendahl, Berlin, Schöneberger Ufer 20.

During the week of the congress an official daily journal will be published in three languages (German, English, French). Editor: Konrad Cohn, M.D., Berlin, Potsdamerstr. 46.

An international scientific and industrial exhibition will be combined with the congress. Prof. Dr. Dieck, Berlin, Potsdamerstr. 113, Villa 3, has taken charge of the management of this exhibition, which is to be conducted on a large scale, and he will furnish further information regarding the same.

At the last meeting of the Committee on Organization it was decided that the fee for membership be fixed at 25 marks (\$6.00), which sum will also entitle the holders of membership cards to a copy of the Transactions when published. For participation in the social functions additional cards will be issued by the Berlin Local Committee at a very low price. A guarantee fund of 20,600 marks has already been subscribed, and it has been decided not to call upon foreign visitors for financial or administrative support.

A hearty invitation is extended to all foreign confrères.

PROGRAM.

The following provisional program has been arranged:

SUNDAY, AUGUST 22.

Meeting of the Fédération Dentaire Internationale. Evening: Reception of the guests at the Reichstagsgebäude.

MONDAY, AUGUST 23.

Morning: Opening session. After the official addresses of welcome, four orators (German, English, French and American) will speak on subjects chosen by themselves and important for the entire profession. The National Committees of the respective countries have each been requested to nominate their orator.

Evening: Reception given by the City of Berlin at City Hall.

TUESDAY, AUGUST 24.

9 a. m.—2 p. m.: Sessions of the Sections.

Evening: Banquet in the halls of the Zoological Gardens.

WEDNESDAY, AUGUST 25.

9 a. m.—2 p. m.: Sessions of the Sections.

Evening: Fiftieth anniversary of the Central Verein Deutscher Zahnärzte (Central Association of German Dentists) in the halls of the Rheingold.

THURSDAY, AUGUST 26.

Second general session in the great hall of the Reichstagsgebäude. Subjects and questions will be discussed by speakers appointed by the different countries.

Evening: At the disposal of the congressists.

FRIDAY, AUGUST 27.

9 a. m.—2 p. m.: Sessions of the Sections.

Evening: Reception in honor of the congressists given by the confrères of Berlin and of the province of Brandenburg.

Special train to Wannsee.

SATURDAY, AUGUST 28.

9 a. m.—12 m.: Sessions of the Sections (passing of resolutions) and meeting of the Fédération Dentaire Internationale.

3 p. m.: Closing session. Acceptance of the resolutions of the Congress.

Evening: Farewell banquet at the Halensee Terraces.

On Sunday and after, groups of the congressists will visit German cities and universities.

The Bureau of the Congress will be opened four weeks before the opening of the congress. A postal, telegraph and telephone office will be established, also refreshment rooms.

The size of the Reichstagsgebäude will render it possible for the different sections to meet simultaneously, so that the participants may hear lectures in different sections on one day.

In order to facilitate conversation between men of different nationalities, those confrères who speak English will wear a blue badge, those who speak French a red badge.

The Hamburg-American Packet Co. allows to members of the congress a reduction of 25 per cent. except during the height of the season.

The Berlin Local Committee will be pleased to procure lodgings for foreign colleagues and supply them with all information concerning their journey, their sojourn in Berlin, etc.

The prices of rooms in hotels vary from 2.50 to 30 marks per day (\$0.60 to \$7.00). All questions regarding this subject should be addressed to the president of the Local Committee, Professor Guttman, Potsdam.

In order to make the visitors acquainted with the sights of Berlin and its environs, ably conducted excursions have been arranged for. The scientific institutions of importance will also be open to visitors.

MICHIGAN STATE BOARD OF DENTAL EXAMINERS

The next meeting of the Michigan State Board of Examiners for the examination of candidates for license to practice dentistry in Michigan, will be held at the Dental Department of the University of Michigan in Ann Arbor, beginning Monday morning, June 14, at nine o'clock. Applications must be in the hands of the Secretary at least 14 days before the examination. Application blanks and rules governing examinations will be furnished by any member of the board.—A. B. Robinson, Secretary-Treasurer.

MICHIGAN STATE DENTAL SOCIETY

The fifty-third annual convention of this Society will be held at Kalamazoo, on June 29, 30 and July 1. An attractive and instructive program is in the course of preparation and a most profitable meeting is assured.—James White Lyons, President; Don M. Graham, Secretary.

NEW HAMPSHIRE AND VERMONT DENTAL SOCIETIES

A joint meeting of the New Hampshire and Vermont Dental Societies will be held at Hotel Weirs, N. H., May 18, 19, 20 and 21, beginning the evening of the 18th. An excellent program is promised.—Fred F. Fisher, Secretary.

SEVENTH DISTRICT DENTAL SOCIETY

The Seventh District Dental Society of the State of New York will hold its annual meeting in Rochester, N. Y., on the 16th and 17th of April, at the Seneca Hotel.

Plans are under way to make this the largest and most attractive meeting in various points of interest, which has ever been held in New York State, and all dentists within a radius of three hundred miles will be greatly benefited by coming. There will be a large number of clinics at the chair and also table clinics, and several interesting papers will be read. The manufacturers of dental instruments and supplies will also aid in making this a large meeting, and a most cordial invitation is extended to all who will come.—Lewis S. Goble, E. L. Schlottman, C. A. Thron, C. W. LaSalle, Secretary, Business Committee, Rochester, N. Y.

INDIANA STATE DENTAL ASSOCIATION

The fifty-first annual meeting of the Indiana State Dental Association will be held at Indianapolis June 29, 30 and July 1. Plans are being perfected to make this the greatest strictly state meeting ever held in the history of our society.—Otto U. King, Secretary, Huntington, Ind.

ALABAMA DENTAL ASSOCIATION.

The fortieth annual meeting of the Alabama Dental Association will be held in Anniston, Alabama, May 11 to 13, 1909. The program will be an exposition of present day methods of practice. Make your arrangements now to attend.—E. W. Patton, Secretary, 1010½ Broad St., Selma, Ala.

The California State Dental Association and the Alumni Association, College of Dentistry, University of California, will hold a joint meeting on July 6-7-8 at the College Building, Second and Parnassus Aves., San Francisco. Arrangements are being made for a number of prominent eastern dentists to be present and contribute to the clinics and papers, in addition to members from the state. Manufacturers are being solicited to make exhibits, and inasmuch as there will be a series of meetings on the Coast from June 28th to July 23d, it is expected that exhibitors will find it to their advantage to make the circuit. Fuller details of program will be announced next month.

AFTERMATH

Robberies

- Feb. 1.—Dr. J. Moon, San Francisco, Cal., dental gold and crowns worth \$100. Dr. M. E. Davis, San Francisco, gold crowns worth \$15.
- Feb. 28.—Dr. F. W. Herr, Waterbury, Ct.; loss, \$300 in gold plate, solder, crown and bridge-work. Dr. W. B. Brewster, Waterbury, gold worth \$5.
- Jan. 29.—Dr. S. R. Neidigh, Freeport, Ill., \$20 in gold.
- Feb. 5.—Dr. Cleveland, Pekin, Ill., \$300 worth of gold.
- Dr. J. H. Robinson, Peoria, Ill., \$30 in gold leaf.
- Drs. Peters and Daniels, Peoria, \$50 worth of gold.
- Dr. Houston, Peoria, \$20 worth of gold.
- Feb. 14.—Dentists of Mt. Vernon, Ill., lost several hundred dollars' worth of gold foil and teeth.
- Jan. 28.—Dr. G. F. Hitchcock, Plymouth, Ind., \$60 worth of gold fillings, plate, bridge and pellets.
- Feb. 14.—Drs. Smiley & Vanodol, Washington, Ind., gold plate valued at \$200.
- Jan. 23.—Dr. W. R. Coburn, Stockton, Kan., \$12 worth of gold.
- Dr. L. E. West, Stockton, \$12 worth of gold.
- Dr. J. G. Forney, Stockton, gold worth \$25.
- Jan. 31.—Dr. J. E. Taylor, Manhattan, Kan., loss will exceed \$25.
- Dr. G. A. Crise, Manhattan, gold crowns and filling material worth \$50.
- Feb. 3.—Samples worth \$300 taken from show case owned by the Waterbury Dental Co., Brooklyn, N. Y.
- Jan. 24.—Gold and silver exhibits worth \$100 taken from case of the Uthma Dental Co., Ogden, Utah.
- Feb. 2.—Dr. Gilbert Tate, Racine, Wis., \$7 worth of gold filling.
- Dr. J. G. Gruber, Racine, \$40 worth of gold.

Deaths

- Feb. 5.—Dr. Harry B. Randall, Erie, Pa., aged 34 years, of typhoid pneumonia.
- Feb. 26.—Dr. Henry L. Upham, Boston, Mass., aged 61 years, of heart disease.

Positions at the Chair

This was the subject before the Cedar Rapids, Iowa, Dental Society, March 1st, 1909. The positions illustrated in Dr. Black's book were shown upon a screen. A general discussion followed, each speaker giving his idea of positions.

Dr. Gustavus North said: "Gentlemen, this has been an interesting subject, and I approve of the positions in operating that we have had the pleasure of seeing upon the screen, but I do condemn some of the positions I have witnessed in clinics, where the dentist would take improper positions, almost lying upon the patient. Gentlemen, I consider this improper and vulgar; the lady patient is in a helpless condition, thrown back in the operating chair, with the rubber dam upon her teeth; she simply has to submit to the treatment of the dentist. The patient is aware of every unnecessary action of the operator, even if she cannot resist. I have practiced dentistry over forty years and I have never seen the necessity of taking improper positions in operating, and no one can operate in my office unless he is willing to observe decency at the chair."

Cows and Tooth Brushes

A recommendation that the teeth of dairy cows be cleaned twice daily appears in a paragraph on "The Dangers of Milk," printed in *The Daily Telegraph* (London). This is based on advice given by Dr. Tanner, of Los Angeles, Cal., who, we are told, is now conducting a health campaign in that city. Says the paper just named:

"Dr. Tanner is convinced that bovine teeth harbor many germs hitherto unsuspected, and that these frequently contaminate children's milk, producing all kinds of complaints which his fellow practitioners have talked wisely about, but do not in the least understand. He recommends that the teeth of all dairy cows should be cleaned twice daily, and says that this law should be compulsory."

This moves *The British Medical Journal* (London) to much mirth. In a note headed "Cows and Tooth Brushes," after unfavorable comment on the general character of medical news in the daily press, it quotes the paragraph given above and then says:

"It is well that this important pronouncement should receive prominent notice and not be lost to the world. The doctor, who is evidently learned above his fellow practitioners, might have gone a step further and given some directions as to the method of carrying out this bovine dental toilet. Of a well-known character in Chaucer it is recorded, 'He scrubbed his mouth with sope and eke with sand.' But both soap and sand might possibly be objected to by the learned doctor on the ground that they might travel by the same route as the malevolent germ, and find their way into the milk. We would suggest in place of either of them the employment of the tooth brush. As in the case of the Scot with the ample nose, regarding the use of snuff, the cows with their dental development would afford 'gran' accommodation' for the implement proposed. Again, as the germs are not likely to be restricted to the regions of the teeth, but would probably find a location in other parts of the mouth and pharynx, we would further suggest that each cow should be supplied with an antiseptic gargle."

Veteran Dentist Beats Roosevelt's Ride

Dr. J. A. Throckmorton, of Sidney, O., on March 1st, 1909, made his record horseback ride of 120 miles in 12 hours and 36 minutes, beating the record of President Roosevelt of 98 miles in 18 hours.

The ride had been given considerable publicity, and, notwithstanding the rain, the doctor was greeted by large crowds along the route. Upon his return to Sidney on the last trip he was welcomed by a brass band and a crowd of enthusiastic citizens.

The result of the gallop will be telegraphed to the president, who has manifested interest in the effort to break his record.

Dr. Throckmorton said he felt as well when he finished the ride as when he started. He is past 60 years of age.

To Amend Montana Dental Law

Butte dentists, at a meeting held February 8, discussed plans for amendments to the state dental law with a view to submitting a bill for several changes to the legislature.

Most important of the suggested changes is a law making admission to practice in any state sufficient to entitle a dentist to practice in every state without further examination. This will undoubtedly be embodied in a bill to be presented to the legislature.

Examination Frauds in New York

It has recently been found that an impersonator has been taking examinations before the New York Regents and obtaining licenses to practice for others. He advertised that he could obtain certificates from the State Board of Regents for anyone who desired to become a physician, a lawyer or a dentist. He charged from \$300 to \$1,000 for obtaining a license. Five arrests of those known to have secured licenses in this way have already been made.

New Dental Society in Michigan

A society to be known as the St. Joseph Valley Dental Association, composed of dentists from Berrien, St. Joseph, Cass and Branch counties, was formed in Niles February 5. The following officers were elected: President, F. H. Essig, Dowagiac; vice president, W. A. Cook, Coldwater; secretary, S. W. Hovey, St. Joseph; treasurer, R. A. Bowie, Three Rivers.

Dental College Absorbed

Tulane University has absorbed the New Orleans College of Dentistry.

Though the matter has been on the tapis for the past two years, it was brought to a head February 15, when the Board of Administrators of Tulane framed a proposition, which was deemed acceptable to the faculty of the Dental College, and which was formally ratified at a meeting of the directors of the college held February 17.

Temperaments

Is the title of a little booklet just published by the author, Gustavus North, A. M., D. D. S., Cedar Rapids, Iowa, and is the most concise and practical treatise on this subject that we have seen. The price of the book is so moderate—25 cents—and the contents so valuable, that every dentist ought to possess a copy. It can be obtained from the author.

Newsy Notes

Dr. M. R. Brinkman, of Hackensack, has been elected president of the Central Dental Association of Northern New Jersey.

Fire in Kansas City, February 11, destroyed the offices of several physicians and dentists.

Dr. J. V. Ireland, of Logansport, Ind., was injured by an exploding vulcanizer, February 11. His face was badly blistered by the scalding water, and was cut in a half dozen places, where broken portions of the vulcanizer struck him.

A gentleman in Los Angeles, Cal., has brought suit in the superior court against a dentist for \$10,725 damages on account of injuries alleged to have resulted from an operation performed by the dentist in the removal of certain teeth from his jaw. The plaintiff alleges that a piece of tooth was permitted by the operator to escape from his instrument and to drop into plaintiff's lung, thereby causing serious injury.

A good law was enacted in Iowa February 1, when the house adopted a senate measure exempting the dentists from jury service.

All Boston dentists were interested in the Sunday law test case heard in the municipal court recently by Judge Sullivan. Sergeant Manning, accompanied by a patrolman, visited the office of a dentist Sunday morning, and the former asked to have his teeth examined. He was accommodated, and then he secured a summons for the dentist. Judge Sullivan ruled that the examination of teeth on the Sabbath is a work of necessity to alleviate immediate pain, and that no dentist could be expected to know whether teeth needed immediate attention until he had examined them. The dentist was acquitted.

Professional safe crackers gained entrance to the Climax Dental Manufacturing Company, Scranton, Pa., February 6, drilling open the safe and securing in all over \$1,500 worth of gold and other valuables.

The First and Second District Dental Society of Louisiana met in the banquet hall of the St. Charles Hotel, in monthly meeting and for annual election of officers, Wednesday, February 24th, 1909. The following were elected: Dr. S. H. McAfee, president; Dr. E. J. Zeidler, vice-president; Dr. E. H. Ramelli, secretary; Dr. W. C. Richardson, treasurer; executive committee, Dr. J. A. Gorman, chairman, Dr. C. S. Fuller and Dr. S. S. Grosjean.

OUR OPINIONS AND OTHER THINGS

Here's where the publication end of The Dental Summary organization has its say: here are recorded opinions and conclusions that cannot be changed, colored or eliminated by business considerations of any kind, mingled, and more or less pleasantly interspersed, with funnigrams and think irritants. Neither the editor nor any of his valued coadjutors is responsible for statements herein; and the names of the writers will, upon application, be made known to those who have the right to know.

Binding the Dental Summary

We are binding The Dental Summary at the following prices:

In two volumes, six magazines each, in full cloth, \$1.00 per volume; in one volume, containing the entire twelve numbers, full cloth, \$1.75.

In two volumes, six magazines each, in half leather, \$1.50 per volume; in one volume, containing the entire twelve numbers, \$2.00.

In sending your magazines, let us know whether you want the covers and advertising pages bound or removed.

Magazines must be sent to us with express charges prepaid. Prices do not include return charges.

Other magazines bound at same rates.

Decision has only half its value unaccompanied by promptness.

Here's a suggestion that every dentist who needs power in his laboratory will do well to heed. Write to The Divine Water Motor Co., Utica, New York, for description and price of the Red Devil Water Motor, guaranteed in every way, and one that costs a mere trifle for operation. Thousands of them are in use everywhere, and a very short trial will satisfy anyone in need of moderate power at the lowest possible cost. Just the thing for general laboratory work.

Better to be a thorn in the side of your friend than his echo; better for yourself, better for your friend.

It is well to strive to make the world better, but it also is well to know that yours is not the only mind in the world, and that your ideal of a perfect world may be altogether impracticable, and, if carried into action, would result in relapses not far above the age of barbarism. If we cannot have things as we think they ought to be, let us have them as good as we can. The only way by which vice and crime can eventually be stamped out is by the gradual reduction system operating along the lines of the better education of the individual.

"Kelene" (Pure Chloride of Ethyl.)

It will interest the profession to learn that in addition to their well known automatic glass spraying tubes, Fries Bros. (92 Reade Street, N. Y.) are also furnishing Sealed Tubes containing 3cc. and 5cc. These sealed tubes are designed to fit any Inhaler the physician may have.

Every practitioner knows that the good qualities of these mixtures are in the proportion to the amount of pure chloride of ethyl they contain. The mixing of two or more products with different boiling points cannot but act differently according to the various conditions liable to prevail.

"Kelene" gives quick and effectual results and on account of its purity (absolutely assured by new glass tubes) is considered far safer than any other brands of chloride of ethyl, or any of the so-called similar anesthetics. A trial will determine its many advantages.—Adv.

For accounts of marvelous adventures of every variety in many lands and under almost every conceivable circumstance, *The Wide World Magazine* is peculiar. That "truth is stranger than fiction" is amply illustrated in its pages. Just the magazine for the waiting room. The International News Co., New York.

The man who makes more promises than he can fulfill is only a little better than the man who makes promises he never intended to fulfill.

Every dentist who employs the anaesthetic of the following formula—chloride ethyl 60%, chloride methyl 35%, bromide ethyl 5%—should be in possession of the information now being circulated by the sales agent of Brugg's Anaesthesia Mixture (David B. Levy, of New York). It is of vital importance that every dentist should fully acquaint himself with the anaesthetic he is using, and therefore it is to his interest to secure a copy of the circulars referred to above.—Adv.

Carry with you harmony and approach men with respect and confidence in them, and you will succeed.

The March issue of *The American Boy* certainly shows that publishers and editors are sparing no effort to obtain the brightest and best, as well as most timely matter for their readers. Among the timely and interesting short stories are: "The Day of the Big Wind," an account of a cross-country race; "The King of the Mountain," a fascinating story of the life of a bear; "A Night in a Blockhouse," tells of a thrilling adventure of two boys with Indians in pre-revolutionary times, and "Nobody's Dog," a splendid dog story. The regular departments are better, more interesting and more instructive than ever, and there are over 90 illustrations. \$1.00 a year. The Sprague Publishing Company, Detroit, Mich.

Man was made for action, not for rest. In action is his sole and only power. Not in the things he accomplishes, but in his workings, he is great. This every great mind has known. If called upon to choose between happiness and the pursuit of happiness, every great mind would choose the pursuit.

"Aid to Shippers" is the title of a 72-page book containing a quantity of information of value to all engaged in the export or import trade. The book is issued by the American representatives of the North German Lloyd Steamship Company, who, by reason of long experience, are qualified to advise. The table of foreign moneys with United States equivalents, together with weights, measurements, tariffs, customs requirements, etc., etc., will be found of great value. "Aids to Shippers" will be sent, postpaid, on request to Oelrichs & Co., Forwarding Department, 5 Greenwich st., New York.

We never profit by our mistakes until we learn to appreciate the difference between regret and repentance.

If any reader of this magazine is not familiar with *The Technical World*, Chicago, our advice is that he at once send for a sample copy and look it over. If he is at all interested in the development of the mechanical arts, he will find this publication of great interest and value to him. It is unlike any other publication, in that its description is written in interesting and popular style, which all can understand and appreciate.

There is just room here to say of the March number of *The American Magazine*—it is great. If you do not read it every month you are missing something. Go now and buy a copy of the March number.

Human Life, Alfred Henry Lewis' unique magazine, occupies a place that it has won for itself after a hard fight. It is a magazine that talks about people concerning whom we all need to be, and wish to be, informed—talks about them frankly and freely, and in such manner as to make us know them. "Recollections of Emerson," by Julian Hawthorne, in the March issue, is alone worth many times the yearly subscription price—only \$1.00—to any lover of the Sage of Concord. Published by Human Life Publishing Co., Boston.

Optimism, even carried to the extent of vagary, is better than pessimism. Everything that has been done in the world, every improvement, mechanical, moral or mental, has been done in response to the urge of optimism. Pessimism never has done anything but grunt.

The Woman's Home Companion for April is an immense volume of nearly 100 large pages, packed full of the productions of such writers as Jack London, Woods Hutchinson, M.D., Maxine Elliott, Christine Terhune Herrick and many others, with special departments devoted to almost every phase of home life. Only a few years ago such a publication would have been impossible at any price. The Crowell Pub. Co., Madison Square, New York.

Ask your dealer to send you a sample of Standard Inlay Wax, made by The Ransom & Randolph Co., and try it as indicated. You will find it to be very rigid when cold, softening readily in either flame or hot water; very plastic when soft, self-adhesive, and does not flake nor scale when being carved. Being very black, it presents strong contrast with tooth structure, and may be readily seen in the mouth. Its meeting with high approval wherever tried.

All the muscles of the body must be used to a certain extent in order to develop their highest degree of strength, but remember that this strength depends upon increasing the vigor and vitality of the spinal region. This represents the human power-house. Here is where the nervous energy is stored, here is where it is given out to the various organs and muscles of the body and by strengthening these parts, you thereby are able to add vigor and vitality to every part of the organism. —Bernarr Macfadden in April *Physical Culture*.

The best way for a man to seem to be anything is really to be what he would seem.

Recent Patents of Interest to Dentists

910870—Artificial tooth, G. Sibley, Philadelphia, Pa.

910970—Tooth brush, A. M. Stryker, Chicago, Ill.

910631—Dental swaging apparatus, H. B. Zendel, Passaic, N. J.

911227—Machine for boxing toothpicks, C. C. Freeman, Dixfield, Me.

911307—Matrix retainer, J. W. Ivory, Philadelphia, Pa.

911398—Artificial tooth, J. W. Ivory, Philadelphia, Pa.

911510—Dental handpiece, R. M. Mayes, San Antonio, Tex.

911068—Toothpick, A. C. Perkins, Washington, D. C.

911078—Artificial tooth, F. Sheinman, New York, N. Y.

912051—Dental brush, J. H. Abbott, Philadelphia, Pa.

911646—Atomizing dental obtunder, W. A. Cook and G. S. Hadley, Coldwater, Mich.

911659—Dental mirror and attachment therefor, A. J. Kleberg, Washington, D. C.

911664—Dental floss-holder, J. P. Locke, Toledo, O.

912026—Dental suction plate, C. R. Powers, Princeton, Wis.

911687—Hot air syringe, H. E. Vogel, Chicago, Ill.

912810—Dental matrix clamp, S. S. Carleton, New York, N. Y.

912748—Dental articulator, G. B. Snow, Buffalo, N. Y.

Copies of above patents may be obtained for fifteen cents each by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.

Courtesy requires consideration for others and self restraint.

There is, after all, but one best magazine for boys and girls—*St. Nicholas* (The Century Co., New York) now just beginning its thirty-seventh volume. In both quantity and quality of literary contents, in illustrations and general mechanical completeness, it has no successful rival. Stories, games, puzzles, competitions abound, and there are departments for all children, from the little a-b-ab fellows up to the grayheads. If you are not familiar with *St. Nicholas*, send for a sample copy.

The only true education is to change what is into what ought to be.

Reproaches and questionings break friendship, and no honest man fears to produce proofs.

Two Perfect Men

There is a man who never drinks
Nor smokes nor chews nor swears;
He never gambles, never flirts and
Shuns all sinful snares—

He's paralyzed.

And then
There is a man who never does
Anything that is not right;
His wife can tell just where he is
At morning, noon or night—

He's dead.

—Keller's Spoon.

Profound sincerity is the only basis of talent, as it is the only basis of character. Perform your own work in your own way; then shall men know what you are.

The fresh waters which render the country habitable have been measured. They are derived wholly from the yearly rainfall (including snow), averaging thirty inches over the entire surface and aggregating 215,000,000,000,000 cubic feet in quantity, equivalent to ten Mississippi rivers. Half the rainfall is evaporated; a third flows into the sea through navigable and other streams, and a sixth is either consumed by living things or absorbed into the earth. Of the volume going down to the sea, some 90 per cent. flows in flood torrents, impeding navigation and destroying property to a value reaching over \$100,000,000 yearly; and although hundreds of millions of public money have been spent in "improving" the channels so ill-advisedly that river navigation has steadily declined, both floods and low waters are increasing, while not more than 5 per cent. of the volume is utilized for navigation or power. Of the waterpower available at a cost comparable with that of steam installation, a sixth is utilized, a twentieth runs over Government dams unused, and the remaining 30,000,000 horsepower remains unharnessed,—enough to drive every wheel and spindle, propel every train and boat, and light every city, town, and village in the country. Nature stores in lakes and ponds a volume equivalent to three years' rainfall; also, in the first hundred feet of soil and earth, a volume of ground water equal to seven years' rainfall,—enough to form a reservoir some seventeen feet deep over the entire country. These stores are ill used.—From "The New Union Among the States," by W. J. McGee, in the *American Review of Reviews* for March.

If your sword is short in the battle of life, remember to get closer to your enemy.

THE DENTAL SUMMARY

A Journal of Practical Dentistry

Vol. XXIX

MAY, 1909

No. 5

OFFICIAL ORGAN:

The Ohio State Dental Society

The Michigan State Dental Society

The Indiana State Dental Association

The Kentucky State Dental Society

The Virginia State Dental Society

The Northern Ohio Dental Society

The Eastern Indiana Dental Society

The Southwestern Michigan Dental Society

The Lake Erie Dental Society
and Several Local Dental Societies.

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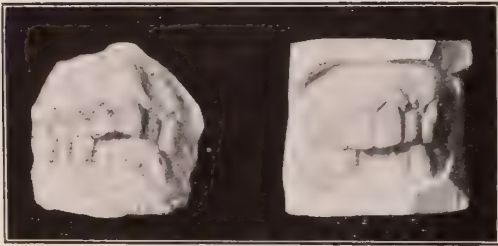


THE CORRECTION OF OCCLUSION, ARTICULATION AND FACIAL EXPRESSION BY LENGTHENING THE BITE, BY MEANS OF CROWNS, BRIDGES AND INLAYS

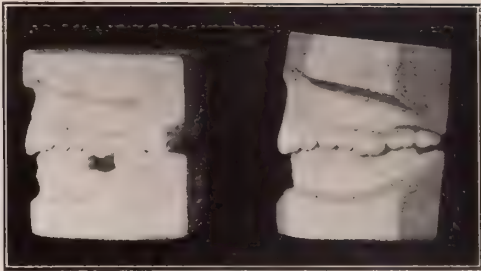
By Weston A. Price, D. D. S., Cleveland, Ohio

THE PURPOSE of this paper is to present a method for restoring to a splendid usefulness and comfort, those cases in which, owing to various causes like extensive extraction or faulty dentition, the masticating efficiency, the facial expression and the ability to articulate distinctly are all or a part seriously disturbed. The abnormal shortening of the face and its attending wrinkles are the chief factors in producing the appearance of age and this, together with the effects of faulty nutrition, makes the sensation of age and lost vigor and conscious deformity, all of which amount to a real calamity in any life. All corrections must be esthetic as well as efficient and as a rule since these conditions are usually found in people in or past middle life it is not generally feasible or wise to try to do extensive restorations by moving the roots, and, in fact, generally not at all necessary.

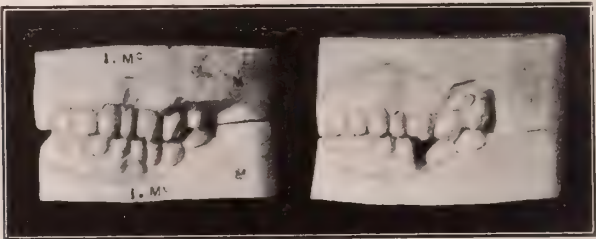
FOOT NOTE.—This illustrated presentation was given before the Ohio State Dental Society in December, '06, and owing to pressure of other duties was not put in shape for publication until this time.



Class I.—Fig. 1.



Class III.—Fig. 3.



Class II.—Fig. 2.

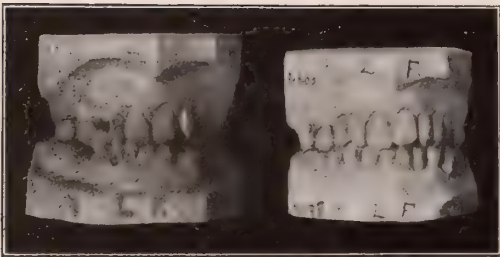


Fig. 4a.

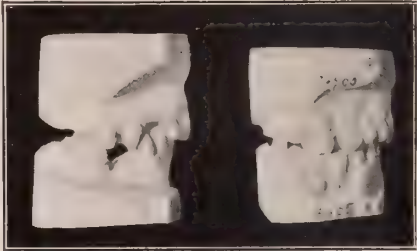


Fig. 4b.

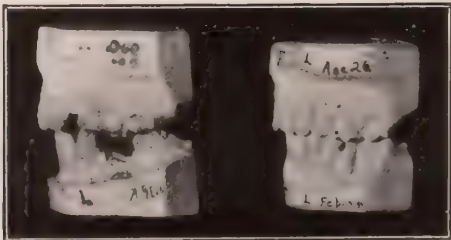


Fig. 4c.

To simplify the presentation I have divided the miscellaneous cases that have come to the writer into eight classes and selected just one or two typical cases of each class to represent each class. We will first consider very simple deformities, that do not strictly come under the title.

Class 1 represents those cases where there is a serious deformity in middle life from malposed anterior teeth which should naturally have been regulated in early life but were not. The malposed crowns can be removed and strong porcelain crowns with invisible gold base placed on the same roots in a nearly correct relation with exceedingly little disturbance to the duties or comfort of the patient and with very great advantage to the appearance. Fig. 1 is typical, being protruded central incisors. This woman's aged mother wept for gratitude when her daughter came home with this simple correction of a glaring blemish on an otherwise beautiful face.

Class 2 includes those cases where the discomfort produced from a simple cause may be an alarming irritant to the health, for so simple a matter as food packing into a trap between the teeth or particularly where the first molar has been extracted and the second has tipped forward producing a trap. Its tipping also destroys its antagonization with its opposing teeth. Fig. 2, *a* and *b*, show such a case before and after restoring with a simple bridge and inlay attachments. Both lingual and buccal views are shown. This restores the occlusion also of the tilted molar and removes an irritant which seriously interfered with the patient's health.

Class 3 includes those cases where the bite becomes locked by a tooth from one arch extending into a space into the other, thus preventing any but an up and down motion and may very seriously interfere with mastication. Fig. 3 shows a case with such a history and the condition corrected with a bridge in the space carried by inlays.

Class 4 includes those cases with a seriously reduced masticating surface due primarily to a lack of dentition. The bite is usually much shortened and locked so that there is no rotating or gliding motion possible. Fig. 4*a*, 4*b* and 4*c* are the case of a young man twenty-five years of age and poorly nourished. The bicuspid are nearly all missing, the right upper cuspid is situated against the first molar. The bite was lengthened three-sixteenths of an inch and a complete normal masticating surface provided by bridges attached with iridio platinum pins into the live teeth in some cases, and in devitalized teeth and with inlays where there were cavities that could be used. The upper cuspids were made into bicuspid by putting an extra cusp on their lingual surface. No gold is visible and the occlusion looks normal. The improved masticating equipment produced the remarkable result that according to his statement he gained twenty-five pounds in three months. This work was completed February 27th, 1905, and is examined once or twice a year, and to this time is apparently in as perfect a condition as when completed. In this case the left lateral was moved slightly, otherwise the teeth were left in their fixed position.

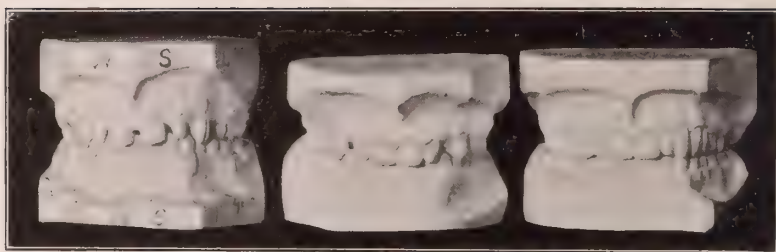


Fig. 5a.

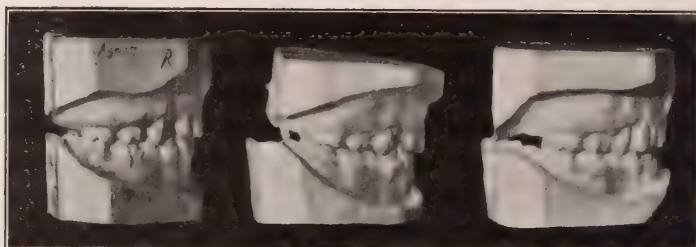


Fig. 5b.

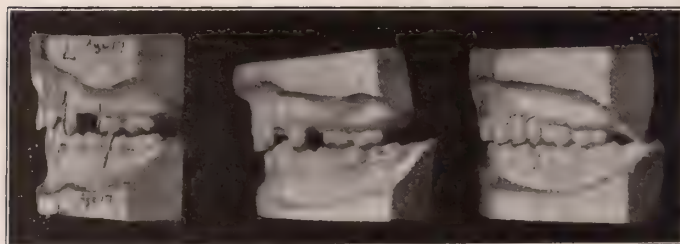


Fig. 5c.



Fig. 5d.

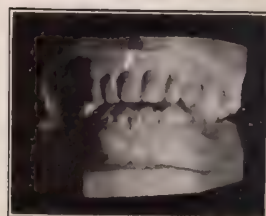


Fig. 6.

Figs. 5a, 5b, 5c and 5d are a more complicated case and of the same classification. The upper bicuspid have not erupted and the cuspids and incisors have moved back. The bite was abnormally short producing in even so young a man, namely seventeen, a compressed appearance to the lips. The cuspids were made into bicuspid by putting a lingual cusp on them of gold as part of the system for lengthening the bite, and artificial cuspids carried into the spaces obtained by having the four incisors placed in proper relation which was done by an orthodontist. Gold tips were placed on the occlusal surface of the molars to lengthen them and bicuspid were carried on these and the cuspid restorations. Small threaded iridio platinum pins go into holes in the lingual surface of the cuspids mesially and distally to the pulp and they are not sensitive and are strong and the whole restoration aesthetic, there being no sign of anything artificial from an external observation. This case was completed May 2d, 1905, and continues giving excellent service as well as a very great improvement in the general appearance and facial expression and ability to masticate.

Class 5 includes those cases where the bite is much shortened and the masticating surface very greatly reduced from loss of teeth by extraction producing much deformity of the mouth and lips and premature appearance of ageing.

Figs. 6 and 7 are cases that are typical of a large number that present presumably in every busy practice. Owing to early extraction of all the lower molars and sometimes one or both bicuspid, the remaining anterior teeth are abraded down almost to the gum line by the abnormal load of an unnatural mastication. The facial expression is extremely distorted and the efficiency of the masticating apparatus very poor, indeed. The method of restoration in these two cases was by placing crowns on the abraded anterior lower teeth and restoring the posterior lower teeth by means of a removable saddle on each side with attachments to the back of the crowns and a round bar passing around under the tip of the tongue connecting the two sides. This is really only a modified lower plate. Usually a couple, at least, of the crowns next to the attachment on each side are united for rigidity. The restoration of Fig. 6 was made in December, 1906, and Fig. 7 in November, 1903, and when last seen both were giving good service and very great improvement in appearance and efficiency.

Figs. 8a, 8b, 8c and 8d are also typical and represent a case of a lady about fifty-five, who recognized with great sorrow the premature marks of time due to shortening of the face as well as the wrecked appearance of most all of the incisal angles, for the upper incisors were abraded from the under side so that restorations of gold soon became dislodged. The bite was lengthened with bridges, tip and porcelain crowns and the incisors restored with compound porcelain pieces that included the mesial lingual and distal surfaces. The improved masticating surfaces made a great improvement in her nourishment, and this, together with the greatly improved aesthetic appearance and corrected facial expression, made her insist that

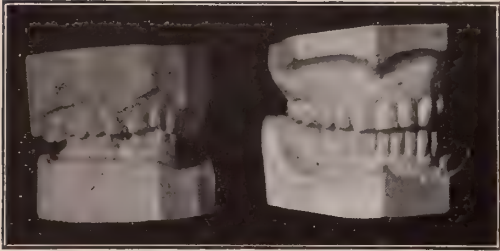


Fig. 7.

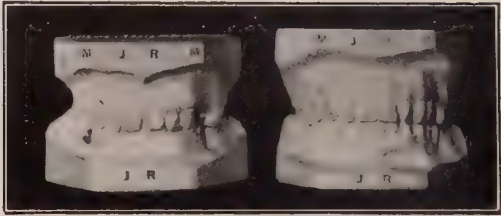


Fig. 8a.

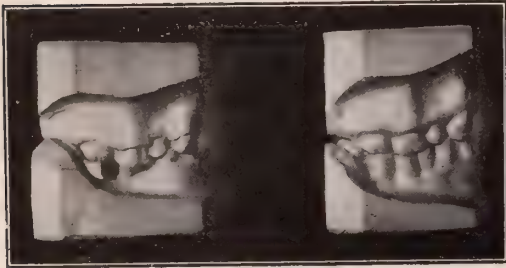


Fig. 8b.

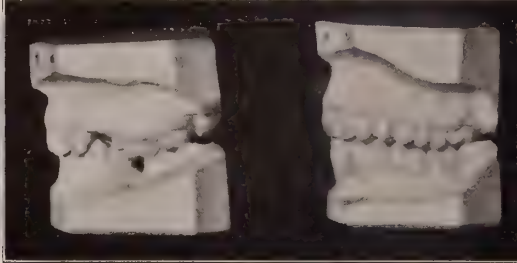


Fig. 8c.

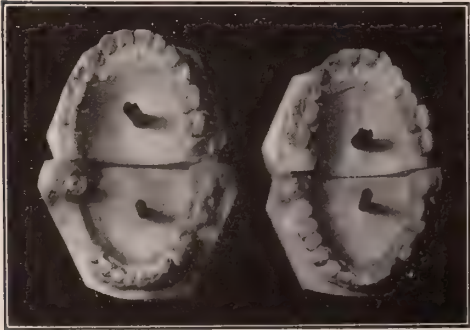


Fig. 8d.

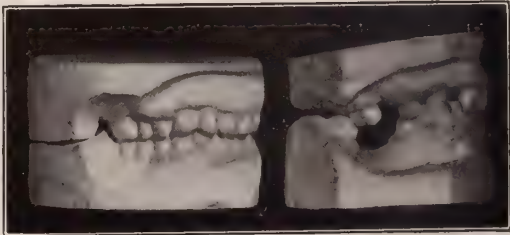


Fig. 9a.



Fig. 9b.

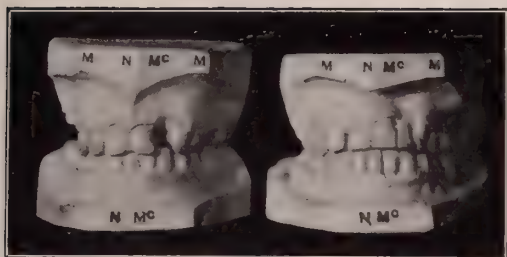


Fig. 10a.

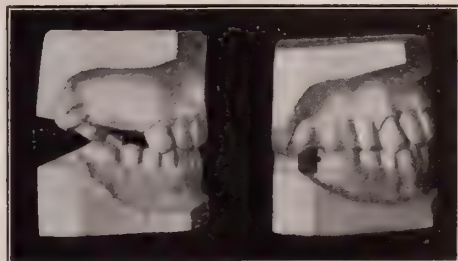


Fig. 10b.

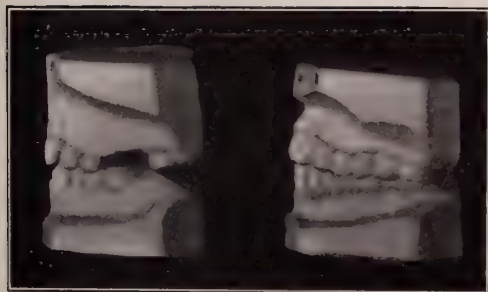


Fig. 10c.

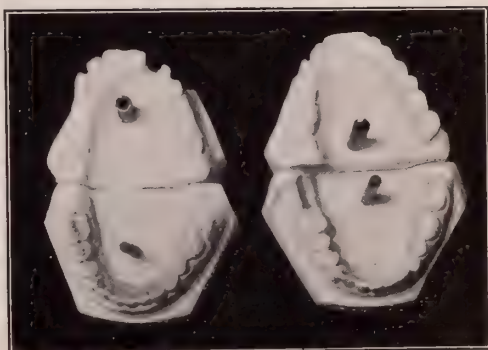


Fig. 10d.



Fig. 11a.

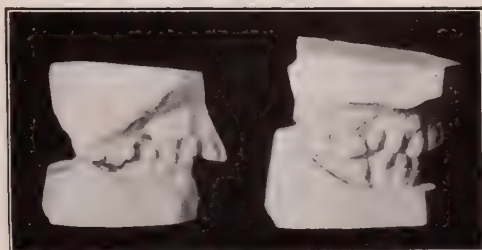


Fig. 11b.

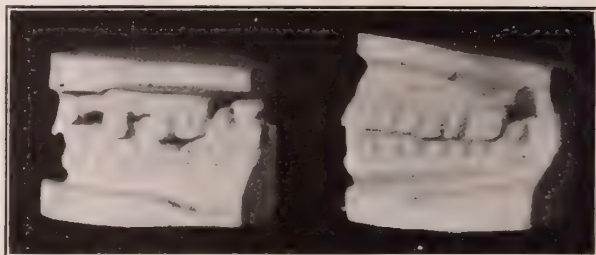


Fig. 12.

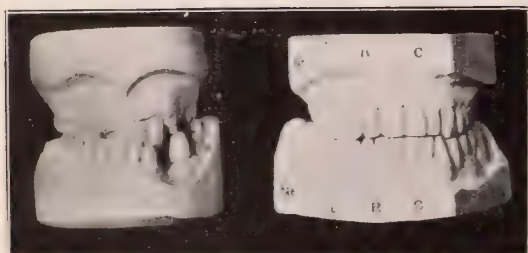


Fig. 13a.

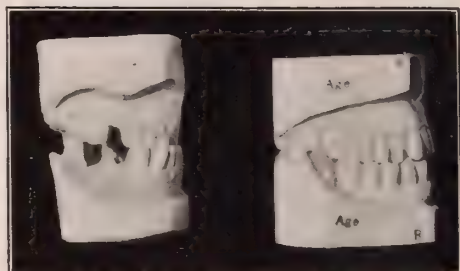


Fig. 13b.

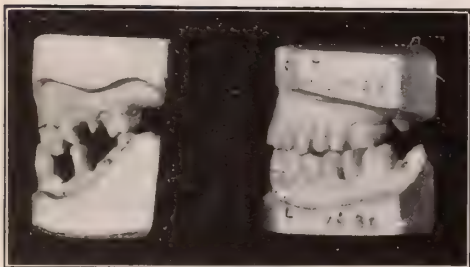


Fig. 13c.



Fig. 13d.

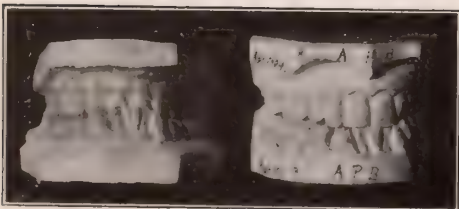


Fig. 14a.

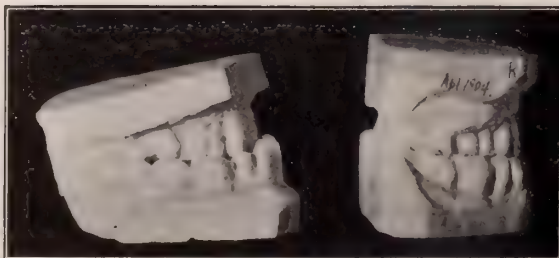


Fig. 14b.

she looked fully fifteen years younger, which her ambitions easily verified. The change was very marked and her health and appearance very greatly improved.

Figs. 9*a* and 9*b* show an extreme case where there were almost no true occluding surfaces in the mouth due to the extractions in one jaw destroying the usefulness of the teeth of the other. The upper right cuspid is malposed entirely, being inside the arch and the lingual cusp of the second bicuspid, which was about the only true occlusion, is split off. A splendid restoration was made by using the foundations as shown prepared in Fig. 9*b*, the middle model, and placing the restored teeth in their proper positions although the foundations were out of line, particularly the intruded cuspid, which as shown was cut off and restored. The bite was opened three-sixteenths of an inch making a marked general improvement in the facial expression, and a splendid occlusion. Fig. 10 shows a case of extensive restoration with bridges for lengthening the bite. Fig. 11 is typical of a variety of this class of cases where an extensive protrusion of the upper incisors is being produced by the lowers by the abnormally close or shortened bite. Fig. 11*b* shows these same teeth three months later, for they have, by the stress of the lip only, dropped to nearly normal position again. There are many such cases developing in all our practices that should have preventive treatment and thus prevent the necessity of later corrective treatment.

Fig. 12 is typical of excessive abrasion due to lack of support. In this case as shown the upper molar has cut down part of the lower molar and bicuspid almost to the gum line. The bite was lengthened about four-sixteenths of an inch with inlays and bridges and the restoration of the facial expression, as well as the masticating efficiency, was very gratifying. This case was completed in May, 1906, and at the time of this publication is still giving as good service as when inserted. Almost six months after the completion of this restoration this lady, about sixty-five years of age, came to the office and said she feared she had never properly expressed her gratitude and presented the writer with a huge bouquet of American Beauties.

Class 6 represents that class of cases where the shortened bite and broken and abraded anterior upper teeth has permitted the lower teeth to extend beyond the uppers. Figs. 13*a*, 13*b*, 13*c* and 13*d* illustrate such a case before and after. The restorations were made with porcelain crowns and bridges and nothing but porcelain in view. The crowns were inclined outward to about their normal position, and the general improvement was exceedingly great as can be judged. This patient is seen frequently and since the above was done in April, 1905, has had practically nothing to be done except examination and cleaning, which latter he keeps very well done himself. This patient was only twenty-eight years of age and had let his teeth go to this extreme condition through sheer fear of dentists. It was possible to do even so extensive a restoration without causing any serious discomfort. Note particularly the difference in the width of the arch before

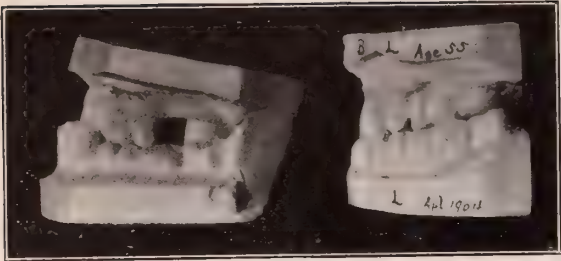


Fig. 14c.

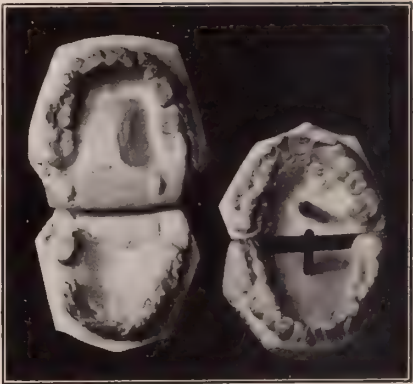


Fig. 14d.

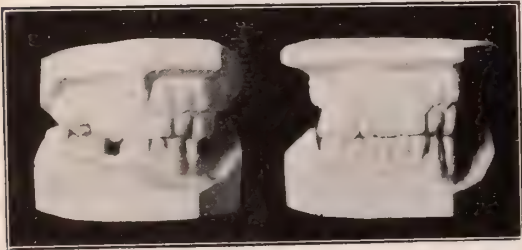


Fig. 15a.

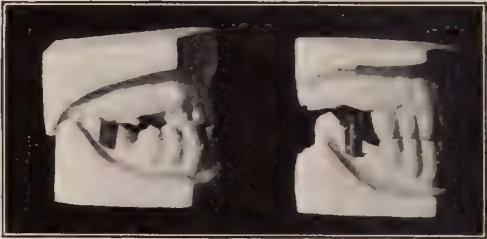


Fig. 15b.

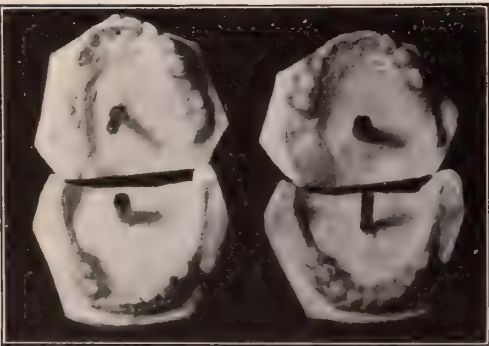


Fig. 15c.



Fig. 16b.

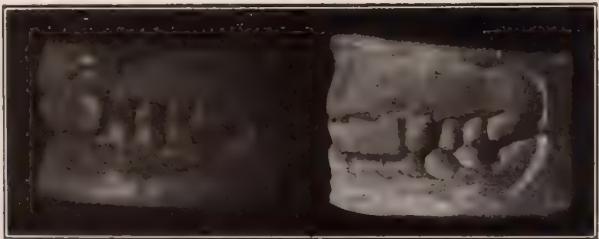


Fig. 16a.

and after, though no roots were moved at all in their sockets, only the placing of the crowns in their new position.

Figs. 14*a*, 14*b*, 14*c* and 14*d* are of the same class but a more extreme case and with a serious resulting complication. The patient, then aged fifty-five, a busy business man, was brought by a physician for an X-Ray picture of the maxillary articulation to find a suspected cancer, for the patient had had such pain for months that he could not masticate and for three months had not been able to sleep more than two hours out of twenty-four, and seriously feared he would do himself bodily harm in his extremity. Temporary extensions were made to raise the bite and that night the patient slept much more than any time for months, and the neuralgia paroxysms became much less frequent. The permanent restoration was made as shown with tips and crowns, correcting the relations about the articulation and the distressing irritation rapidly and entirely disappeared, and now for over five years he has had no recurrence.

Class 7 represents those cases where the bite has become crossed by faulty eruption of some of the teeth, usually one of the upper cuspids developing in occlusion inside the lower teeth. Fig. 15 shows such a case restored, not by moving the roots, but by placing new porcelain crowns on the roots in the corrected relation and produces a very greatly improved condition, both for mastication and aesthetically.

Fig. 16 shows a more aggravated case corrected in the same way. This was done in April, 1896, 13 years ago, and is still in excellent condition.

Class 8 represents those cases where there is an abnormal development of one of the jaws in adult life due to acromegaly or gigantism.

Fig. 17*a* shows this gentleman at thirty-two years of age, before the disease commenced, when he happened to have a plaster cast made of his face. Fig. 17*b* shows the change when he came to the writer twelve years later when the lower arch had developed so that it was about one-quarter of an inch outside of the upper, all the way round, making occlusion absolutely impossible. There were almost no cavities and the teeth were almost all in place in both arches. A splint was made to fit over the upper natural teeth which extended outward and downward all the way around and carried a set of large artificial teeth in occlusion with the malposed lowers. This also carried his upper lip out to place and greatly improved his appearance as shown in Fig. 17*c* as well as making mastication possible. The condition of continuing enlargement involved other parts of the body,—for example, his bare feet were fourteen inches long and his first and second fingers four inches in circumference and the others in proportion. His wrists and ankles were almost normal size and his tongue almost completely filled the enlarged oral cavity. The writer made frequent measurements of the developments and the head enlargements were most out of normal proportion. Every few years the dental splint had to be made over to extend out to the new relation until the lower was fully three-quarters of an inch outside the uppers all the way round as shown in Fig. 17*c*.



Fig. 17a.

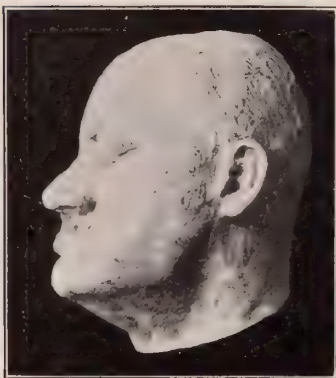


Fig. 17b.

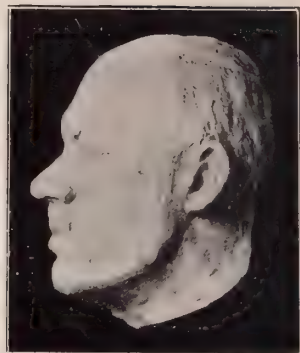


Fig. 17c.

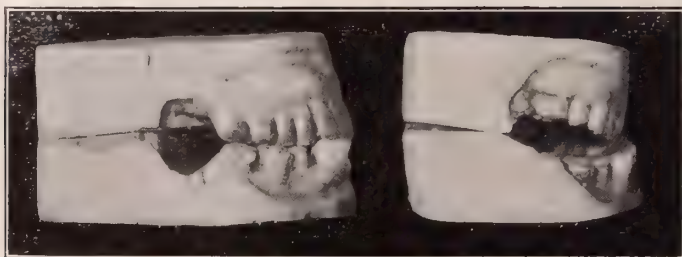


Fig. 17d.

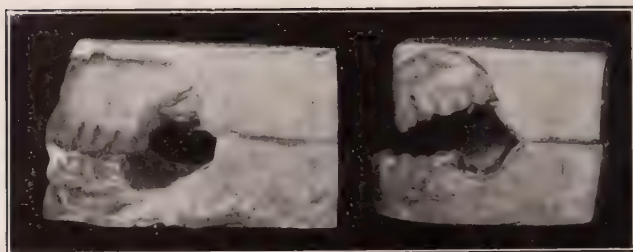


Fig. 17e.

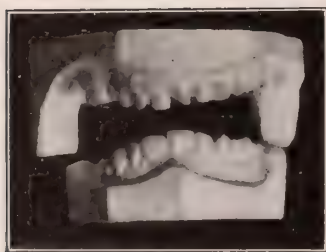


Fig. 17f.



Fig. 17g.

Figs. 17*c* and 17*d* show the restoration as described. This is the only authentic case the writer has ever seen of an upper jaw with two complete sets of teeth. It is remarkable that there was no decay of the upper natural teeth under the splint.

Since presenting these cases in Columbus in December, 1906, this patient has died from a heart lesion caused by the extreme pressure of the enlarged tissues in the Thoracic cavity.

The above does not include any cases not completed prior to December, 1906. The recent cases will be reported later.

The great importance of this class of restorations is becoming more and more apparent continually, as also the certainty of these operations being practical and having continued efficiency.

Some prime factors in this work which experience has shown, are, to use porcelain crowns with gold bases and to use with confidence gold inlays for bridge supports, if they are very carefully mortised into the tooth structure instead of and in preference to gold crowns. Also, iridio platinum posts can, with perfect safety, be used in live teeth if properly placed, and carry heavy burdens for a long time if properly protected and accurately fitted before cementing.

No class of professional service in the writer's hands has given so great satisfaction to both the patients and himself as the above.

SURGERY OF DISEASES AND DEFORMITIES OF THE MOUTH.

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IF ORAL Surgery ever comes into its own in the Realm of Medical Science, it must be through better recognition of the extent and variety of the diseases requiring treatment in this field. Profitable consideration necessitates, first of all, an answer to the question:

“What do we understand to be Surgical Diseases of the Mouth?”

Second—A division of the subject based primarily upon the classification of those pathologic conditions, manifested in this region, which may, as definitely as possible, signify whether they are chiefly local in character, or merely a local expression of more general disease.

Third—For practical purposes, a separation into those that can be cured by minor and others that require major operations.

The first distinction is necessary because of the growth that has taken

NOTE.—By permission this paper was read at the Ohio State Dental Society, in December, '08, and a number of lantern slides were used in connection therewith. These, together with many other illustrations, will be published in this series of articles when considering the various diseases given in the classification.—*Editor*.

place in the development of the possibilities of surgical treatment of affections that have hitherto been believed to be legitimately within other fields of practice. Moreover, there has, in recent years, been a very marked development in the direction of utilizing surgical procedures in this locality, for the relief of pathologic disturbances more directly in evidence in adjoining regions.

A decade ago the title "Surgical Diseases of the Mouth" would have called for the consideration of a comparatively small number of diseases and these in a distinctly limited way as compared with the greatly increased number and widely extended range of both general and local conditions recognized in modern treatment of pathologic oral conditions.

Since the pathology of diseases of the mouth is identical with that of similar diseases in other parts of the body, although modified by distinctive differences due to regional, anatomical and functional conditions, a radical separation from other pathologic affections is impossible. A comprehensive classification must include, not only abnormal processes directly and indirectly involving structures connected with the mouth, but also take into consideration all phases of somatic physiology capable of exerting any direct or indirect reflex influence upon this region.

CLASSIFICATION.

The following classification has been constructed upon these principles. In its preparation no effort at originality has been attempted and care has been taken not to overstep the bounds of the fully understood principles of either pathologic or symptomatologic relation; nevertheless, it has been done with a sincere hope that as an object lesson, if nothing more, the tabulation of inter-related diseases in this way may prove more or less generally beneficial and lead to more extended effort in oral surgical treatment.

DISEASES OF DENTITION: Pathologic first dentition—Intestinal disturbance, Nervous affections, Skin eruptions; Accidental injury to developing teeth; Destruction of erupting teeth; Mal-posed teeth; Supernumerary teeth; Irregularities of teeth; Unerupted teeth; Anomalous development.

DISEASES OF THE MUCOUS MEMBRANE OF THE MOUTH: Gingivitis; Simple stomatitis; Catarrhal stomatitis; Aphthous stomatitis; Ulcerative stomatitis; Gangrenous stomatitis or Noma; Parasitic stomatitis or Thrush; Gonorrheal stomatitis; Pseudo-membranous stomatitis; Tuberculous stomatitis; Syphilitic ulceration; Leukoplakia; Diphtheria; Lichen planus; Foot and mouth disease.

DISEASES OF THE TEETH: Erosion; Abrasion; Caries; Pulpitis; Pulp stones; Pulp degenerations; Gangrene; Pericementitis; Dento-alveolar abscess; Interstitial gingivitis; Pyorrhea alveolaris; Calcic deposits; Hyper-cementosis; Polypi;

Tumors; Absorption of roots of permanent teeth; Implantation, replantation and transplantation; Dislocation of roots of teeth; Fracture of roots of teeth.

DISEASES OF THE TONGUE: Glossitis; Pseudo-membranous glossitis; Nigrites lingua; Riga's disease; Nuro-glossia; Macro-glossia; Lymphangioma; Tonguetie (Ankyloglossia); Deformed development, such as absence of tongue, adherent tongue, Lingua bifida, Long tongue.

DISEASES OF THE GLANDS: Parotitis; Ptyalism; Syphilis; Ranula; Salivary calculus; Salivary fistula; Stenosis of salivary ducts; Ludwig's angina; Lymphadenitis; Hodgkin's disease; Tuberculosis.

DISEASES OF THE BONE: Periostitis; Necrosis; Caries; Fracture; Dislocation; Ankylosis; Osteomyelitis; Osteitis; Osteomalacia; Leontiasis ossia; Acromegaly; Tuberculosis; Actinomycosis; Glanders; Leprosy; Exostosis; Endostoses; Arthritis.

DISEASES OF THE MAXILLARY SINUS: Mucus engorgement; Empyema; Necrosis of the bony walls; Fracture of the bony walls; Syphilis; Polypi; Cysts; Neoplasms.

TUMORS: Papilloma; Fibroua, Lipoma, Myxoma—Rare, but sometimes present in sub-mucous tissue and other parts of the mouth; Choudroma; Adenoma; Carcinoma; Sarcoma; Angioma—Hemangioma, Lymphangioma; Osteoma—Exostoses, Endostoses; Cysts Mucous Ranula, Dentigerous, Dermoid.

DISEASES PRIMARILY OR SECONDARILY ASSOCIATED WITH PATHOLOGIC ORAL CONDITIONS.

DISEASES OF THE BLOOD: Anemia (disemia); Ischemia; Leukemia; Pseudoleukemia (Hodgkin's disease); Auto-intoxication or Sappremia; Septic-infection or true Septicemia; Pyemia.

CIRCULATORY DISTURBANCES: Thrombosis; Emboli; Infrarc.

DISEASES OF THE VASCULAR SYSTEM: Myocarditis; Endocarditis; Arterio-sclerosis—Atheromatous arteritis, Enarteritis obliterans, Arteritis infectiosa; Phlebitis; Lymphangitis.

DISEASES OF THE SEROUS MEMBRANE: Pericarditis; Peritonitis; Meningitis; Pleuritis; Snyovitis; Bursitis; Thecitis.

NERVOUS AFFECTIONS: Migraine; Neuralgia; Odontalgia; Tic-dououreux; Neuritis; Muscular-tic; Paralysis; Anesthesia; Chorea; Epilepsy; Neuresthenia; Dementia; Aphasia; Acute Anterior Polio-myelitis.

DISEASES OF THE STOMACH AND INTESTINES: Acquired deformities of stomach resulting from diseases; Acquired mal-positions of stomach resulting from diseases; Gastritis; Gastric ulcer; Dilatation of the stomach; Gastric neurosis; Enteritis; Colitis; Appendicitis.

DISEASES OF THE FRONTAL ETHMOIDAL SPHENOIDAL SINUSES AND CELLS: Infection of these sinuses from the maxillary sinus is a matter of frequent occurrence by reason of anatomical association.

DISEASES OF THE NOSE: Deviated septa, spurs, contracted nares, and other nasal deformities associated with contracted dental arches, high arched and defective palates, leading to Hypertrophic conditions causing Rhinitis and other nasal diseases; direct infection from diseased roots of teeth; indirect infection, from the mouth through the maxillary sinus.

LIP AFFECTIONS: Macrocheilia, Synchronia, Hare Lip—Single, 1st degree, 2d degree, 3d degree; Double; Medium; Other deformities; Lupus.

PALATE: Cleft—Acquired, Congenital—Fissure of velum, Fissure of velum and hard palate, Double fissure; Other palate deformities.

Injuries, burns, wounds.

TETANUS.

ERYSIPHELAS SYPHILIS.

TUBERCULOSIS.

DISEASES OF THE EAR: Middle ear disease, through infection of the Eustachian tubes, superinduced by unhealthful oral conditions; Mastoiditis, caused by infection via the same route; Occlusion of the external auditory meatus by changes in the glenoid cavity, caused by altered relation of the condyle through mal-occlusion.

DISEASES OF THE THROAT: Tonsillitis; Pharyngitis; Laryngitis; Ulcerative and other pathologic conditions in this region due to mouth infection and extension of disease through continuity of mucous membrane.

DISEASES OF THE EYE: Pain—Reflex, Direct from pressure within the Maxillary Sinus; Loss of sight through disease of the Sphenoidal Sinus induced by infection through the Maxillary Sinus or from Neoplasms, or other disease originating in the mouth.

DISEASES OF THE RESPIRATORY PASSAGES: Bronchitis; Pneumonia; Pulmonary supuration; Gangrene of the lung; Tuberculosis; Glander of the lung; Actinomyco-sis of the lung.

DISEASES OF THE URINARY ORGANS: Nephritis in all its forms that may be due to, toxic affection, or bacteria from infectious processes, and such degenerations as may be the result of similar etiologic factors. All of which may in turn cause pathologic buccal manifestations.

SPLEEN: Splenitis. (Same explanation as for Nephritis).

LIVER: Hepatitis. (Same explanation as both of the above).

PYREXIA: The high fevers of infectious diseases are frequent causes of affections of the mucous membrane of the mouth. Necrosis of the jaws as a sequellæ of exanthematous fevers is of frequent occurrence. Infections from septic oral conditions are common causes of fever.

It appears to be advisable to call attention to the fact that all of the affections of organs and tissues less commonly recognized in their oral association, such as diseases of the heart, of the serous membranes, of the spleen, liver, kidney, etc., are all quite frequently the seat of disease

in infections, with which the buccal cavity is sometimes affected secondarily to other pathologic conditions, or is the site in which the infection first manifested itself. In conditions such as auto-intoxication and mal-nutrition, it is also well known that tissues of the mouth are frequently affected; therefore, the reasons for their general inclusion in dealing with pathologic oral conditions, would seem to be obvious. In the author's collection of photomicrographs are many sections taken from patients with accurately recorded symptoms that prove the truth of the foregoing statements.

In considering the minor operations, one experiences more or less difficulty in differentiating certain forms or manifestations of disease in such manner as to make clear the dividing line between those cases for which therapeutic treatment is sufficient and the graver forms requiring surgical procedure. A notable example of this is found in Interstitial Gingivitis, or Pyorrhea Alveolaris. In these cases one must always consider the fact that the etiologic factors are in varying degree, both local and constitutional. The constitutional condition may represent the result of disease in other and sometimes remote parts of the body. Local measures of relief in treatment may be so slightly surgical in their nature as hardly to warrant the use of the term whereas in other cases by neglect, the destructive processes may have gone on until surgical intervention is unquestionably required.

Commonly the treatment is quite simple, at least in so far as operative procedures may be concerned, but once septic processes have been allowed to entrench themselves in any of the tissues of the body the degree of operation required, and the extent of the lesion is only bounded by questions of resistance and other individual features of the case. As a further example of the practical side of this question, the experience of one day's clinic at the University of Iowa serves as a suitable illustration. There my oral surgical work is so divided as to impress upon students the importance of the distinction between major and minor oral surgical operations, because all operations belonging to the former class are performed in the State University Hospital. Those of the latter in a surgical operating room equipped for that purpose in the College of Dentistry building, and the students themselves assist in making the diagnoses upon which decision in this regard depends. One day, recently, we had seven cases requiring operation for the surgical cure of chronic long resistant dento-alveolar abscess, and all were upper lateral incisors. The histories of these varied from a few months to several years of recognized trouble. The conditions as we found them upon examination ranged from the usual more or less circumscribed pus cavity, surrounded by diseased bone, to extensive necrosis with sequestra of bone in course of exfoliation, and in some infection had extended to the maxillary sinus. Manifestly there was a vast difference in the extent of surgical interference required, and in the possibilities of disastrous results from infection, if not cared for under the rigid asepsis of hospital regime. To require the simple cases to go to a hospital

would be manifestly absurd. On the other hand to attempt the cure of the graver cases otherwise, would be to incur unnecessary risk.

According to some of the text-books used in the past and to some extent at the present time, we find this division of our Pathologic consideration easily expressed under very few headings as manifestations of disease types, whereas from our later points of view we understand quite distinctly that the extended enumeration here given is barely sufficient and that probably only for a very immediate present. This is equally true of diseases in the other divisions that are included in the schedule given. It is not the purpose of this discussion to urge upon dentists that they assume the right to treat all of these diseases, or that too frequent claim be made for the importance of the relation of the buccal cavity in any case, but it does seem to me to be of very great importance, not only from a humanitarian point of view, but for the respect of the dental profession in the eyes of other medical practitioners and the laity, that the full significance of diseases of the mouth directly and indirectly affecting disease, whether they be constitutional or confined to a limited area be given full significance in the scheme of the science of Pathology, both general and regional. I am further convinced that the cause of oral surgery, from both these points of view, is being held back, because, through imperfect diagnosis and insufficient understanding of the inter-relation of pathologic principles, many operations that would serve to prolong life by the prevention of grave disease, which might safely be done in dental offices, are not performed as they should be, and that many operations of graver nature are there attended to with immediate or post-operative disastrous results which should be sent to a hospital and properly performed under correct surgical methods, and I sincerely hope that the result of your courteous consideration at this time may be beneficial in these respects.

(To be continued.)

INSPIRE all your patients and their friends with a spirit of confidence. Let there be no hesitancy nor doubt in your carriage or your conduct. If you do not know a thing, say so — but make it your business to know, so that you can speak out with the self-confidence born of that knowledge.

PORCELAIN AND GOLD INLAYS

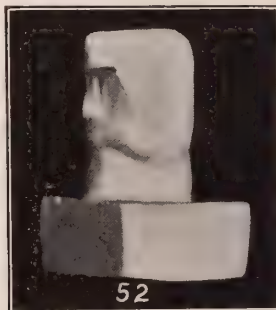
By A. W. Starbuck, D. D. S., Denver, Col.

Superintendent of Infirmary, Colorado College of Dental Surgery

(Continued from page 264, April Summary)

GOLD INLAYS.

PROBABLY nothing ever introduced into dentistry was so universally taken up and created such wild enthusiasm as did the gold inlay, when Dr. Taggart introduced the casting process. There was scarcely a practitioner, no matter from how remote a corner of the land he came, who had not adopted the process within the year. And today, alas, how expensive this wild rush has been to many a man's practice. Undoubtedly greater care is needed in making a gold inlay than ever was called for in porcelain restorations. The difficulty in thoroughly roughening the gold to insure perfect adhesion of the cement, necessitates a careful consideration of mechanical retention in the cavity.



Figs. 51-52.

Although the casting process has decided advantages in most cases, there are certain cases when the old method of burnishing a matrix is preferable. While in others a combination of the two will produce the best results.

In small cavities with four walls, much time can be saved and an equally good inlay made by burnishing a matrix of platinum and filling with pure gold. In cases of large size where it is difficult to remove the wax without impairing the margins, a combination of a pure gold matrix and the remainder cast, is indicated.

STUDY THE OCCLUSION.

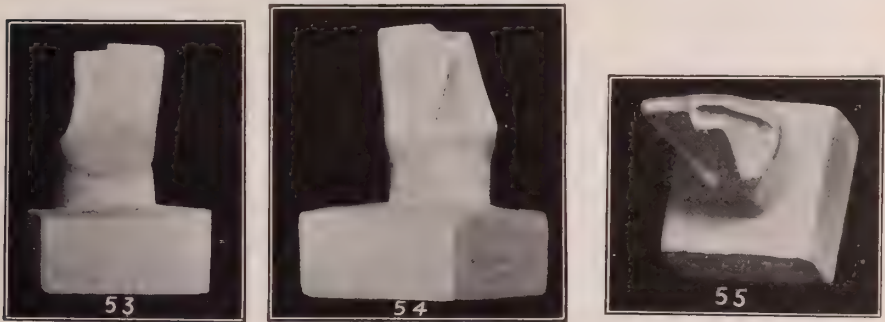
Before starting the preparation of a cavity for a gold inlay a careful consideration of the occlusion must be made. A cavity must have a resistance form to antagonize all stress upon the inlay or it will surely be dislodged. Have the patient move the jaws laterally and notice the stress in this direction, then mesio-distally, as well as at rest. Many peculiar conditions are brought out by doing this, which may completely change the nature of the cavity preparation.

CAVITY PREPARATION.

Simple Approximal Cavities.

The general outline of a cavity for a gold inlay for simple cavities, is very similar to that given for porcelain. In cases where the occlusion is normal, the lingual wall should be cut away to permit the removal of the wax pattern or matrix, in that direction. The incisal and gingival walls should be parallel to each other mesio-distally and there should be a decided seat under the labial wall. The incisal and gingival walls should diverge slightly from labial to lingual, to permit the removal of the pattern.

The technic of the operation consists of, first, breaking down any thin enamel margins and cutting away the lingual wall with chisels, always remembering that unless enamel has an underlying support of dentine, it is worthless and should be removed. Next, with a smooth square end fissure bur in a right angle, entering from the lingual, extend the gingival margin sufficiently to permit the removal of the pattern. Form the incisal wall in the same manner, and with the square end of the bur cut the seat under the labial wall. Then, with hatchet and hoe excavators make a definite



Figs. 53-54-55.

angle at the junction of the incisal, gingival and labial walls with the axial. In very deep cavities it is well to build in with cement, care being taken not to carry it to an extreme. All margins should be smooth and slightly beveled.

CAVITIES INVOLVING THE INCISAL ANGLE.

In this class of cavities it is preferable to use a step for incisal retention. In cutting this, fine grit carborundum stones are used, extending it sufficiently laterally to permit making a pit in perfectly sound dentine. On the labial, only sufficient should be cut away to give the enamel a protection of gold. Much less cutting is necessary as compared with that for a gold filling.

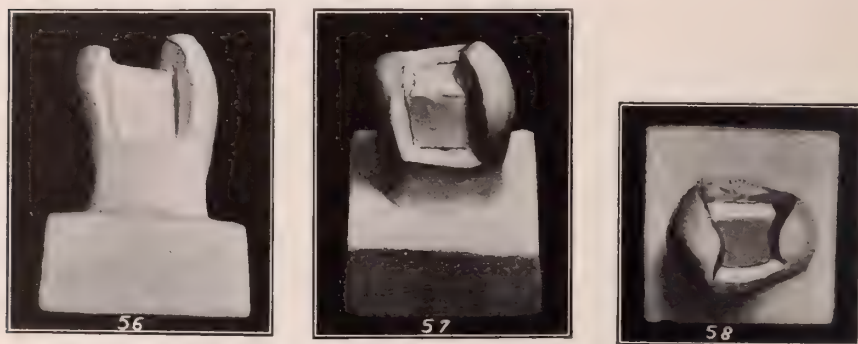
The lingual wall of the step should be cut away to permit good anchorage in dentine. At the end of the step should be a well defined pit.

The body of the cavity is prepared much the same as that for porcelain, cutting away the lingual to permit the easy removal of the pattern. The

gingival wall should be flat and there should be a flat seat under the labial plate. In deep cavities the axial wall may be built out with cement, care being taken that all margins are freed from cement before the impression is taken.

CAVITIES IN BICUSPIDS AND MOLARS.

The ideal place for gold inlays is in the bicuspid and molars. They eliminate the great difficulty of placing cohesive gold in inaccessible cavities and have greater strength. Within a very short time the inlay will almost



Figs. 56-57-58.

take the place of the gold crown. The misfitting band and inflamed gum will be a thing of the past.

In all proximal cavities in bicuspid and molars there should be a step including all fissures on the occlusal surface.

Figs. 56, 57 and 58 represent a cavity in the bicuspid. In the proximal portion there should be a flat gingival seat, the buccal and lingual walls should be as near parallel to each other as possible and permit the removal



Fig. 59.

of the impression. The occlusal portion should be of sufficient width and depth to give strength to the inlay and should terminate in a definite dovetail which affords retention from dislodgment approximately. In badly decayed teeth, the cavity should be built out with cement, to within a

millimeter and a half of the surface. This will give sufficient bulk of gold and will make the inlay of better retention form.

In larger cases, especially where both mesial and distal surfaces are involved, and the buccal and lingual walls are weak, the cusps should be removed and the tip restored with gold.

Molar cavities, Fig. 59, are prepared along the same lines, making an occlusal step extending into all the deeper fissures. The pulpal and gingival walls should be flat and at right angles to stress. The buccal and lingual walls should be as near parallel to each other as possible and permit the removal of the pattern.

All the above cavities are for the restoration of lost tooth structure, and are not intended to carry lost teeth in bridge-work. The cavities following are intended more especially for use in bridge-work and the retention of teeth.

(To be continued)

A METHOD OF UTILIZING ATMOSPHERIC PRESSURE FOR THE RETENTION OF LOWER PLATES.

By D. H. Young, D. D. S., Attica, N. Y.

IN ORDER to secure atmospheric pressure on the lower plate we must proceed by a method that has been formulated with the idea of taking into consideration the various conditions with which we meet in different mandibles, for if we can make a plate for the lower jaw that will exclude the air from under it, there is no reason why atmospheric pressure will not act as well there as with the upper jaw.

I use, for taking impressions of these cases, Perfection Compound. This material is warmed to a consistency at which it will adapt itself readily to the shape of the mouth.

It is then placed upon the tray, put in the mouth, and pressed down almost as far as required. Then wait for a minute or two until it hardens slightly. During this interval of time I have my assistant direct a current of cold air into the mouth from a rotary fan in the dental engine, which procedure chills the outer layer of the compound and prevents it from flowing away from the jaw when pressure is put upon it. While the layer of impression material that is in contact with the tissues is still warm and plastic, the tray is pressed down just a little farther, using from five to ten pounds pressure, and is then held steadily—with about half the force used in pressing it down the second time—until it is quite hard. The tray is then removed and the cast is poured.

In order that we may know why we proceed in this manner, let us go over the taking of this impression again. In the first place, when the material is put in the mouth and pressed down, we get an ordinary impression. After that is allowed to stand for a short time, and the outside is chilled and pressed down a second time, the impression is changed from

the ordinary one, but in what way? When pressing down on the tray the second time the hard ridge of the alveolus cuts just a little deeper into the impression material and remains practically unchanged, while the soft tissues down on the sides of the gums about where the border of the plate reaches are compressed slightly. When the plate is made on the cast from this impression, and put into the mouth, the margins of the plate are sealed all the way around, and this converts the whole lower surface of the plate into one great suction pad—if we may use that term.

One of the most difficult parts of the operation is the trimming of the plate to just that line that will best seal its borders, for if it be too long it will give the muscles an opportunity to displace it. If too short, it may allow air to pass in, and thus defeat our purpose. It is self-evident that the upper plate is retained by air-pressure against gravity, while the lower plate adds its own weight to that of the atmospheric pressure; and so, compared with the upper, the lower has twice its own weight to add to the atmospheric pressure, thus showing that it is a better subject to be retained by such pressure than is the upper plate.

The lower plate has always been a *bête noire* in dentistry.

Of course, we all would rather fill, treat, crown, or bridge to meet the conditions we find in the mouth, but occasionally there come before us conditions for which the science and art of dentistry has nothing better to offer than a plate.

How necessary, then, both for the comfort of the patient and for our own credit, that it be made to adhere to the tissues.

PYORRHEA ALVEOLARIS*

By J. D. Patterson, D.D.S., Kansas City, Mo.

UPON your invitation to speak upon this subject today I have responded because I have something to say to you, and it is, that I am daily becoming more and more convinced that many in our profession are radically in error because they have so little confidence in successful treatment of Pyorrhoea Alveolaris, that such treatment is not attempted. There are two causes for this: *First*—Successful treatment demands unusual patience and attention to detail, and *Second*—Because so many believe in the teaching that the disease is caused by faulty metabolism—a sequence of systemic conditions due to nutritional disturbances.

The lack of interest in and the neglect of treatment, I find, is very generally due to the second statement, and is not due to the shirking of a trying and exhaustive operative procedure, for ethical men would not often avoid difficult tasks if they knew a patient's comfort would be assured. But the neglect, when neglect is found, can usually be traced to the belief that the disease cannot be controlled without improvement or

*Read before the Odontological Society of Western Pennsylvania at Pittsburg, October 13, 1908.

cure of the systemic balance; and they, therefore, knowing that faulty metabolism in its progressed stage (when it may be supposed to originate Pyorrhea) is seldom cured, or even much alleviated, they, accordingly, are loathe to undertake the task.

This condition of things in which, to my mind, we find the greatest deflection from professional duty at present known to the dental profession, has been on account of misleading or false teaching by those who are considered authority, and these teachers are "*particeps criminis*" in the loss of thousands of dental organs which would have been saved and ministered to comfort and beauty, if we had not been taught that little could be done for pyorrhea as its cause was systemic. The very day I commenced the writing of this paper, an intelligent young man of 29 years left his regular dentist and came for my advice because his gums would "bleed in the act of brushing." I found degeneration of gum tissue well established. He said his dentist told him little could be done for pyorrhea and that he probably had the uric acid diathesis. *Again and again* have you and I listened to similar statements. On account of false teaching, dentists *all over our broad country*—good operators, too—are telling their patients: "Nothing can be done;" "Eventually you will lose your teeth;" "It is constitutional," etc.

These statements *absolutely* and *positively* have been proved to be untrue by many operators, who, in thousands of cases, have proved that if all local irritations are removed and sanitation established, cure or perfect comfort comes *WHATEVER PHASE OF FAULTY METABOLISM EXISTS*. And that in *EVERY* case, if treated ere the tissues become so hopelessly involved that the teeth are nearly exfoliated, improvement comes *rapidly and positively*.

Who are the teachers who are responsible for the incorrect beliefs so prevalent? *CHIEFLY, THEY ARE FOUND IN THIS STATE OF PENNSYLVANIA*. Consciously or unconsciously, they have, in my opinion, invited criticism of the profession because they have disseminated beliefs that will not stand the test. They have magnified the factor of systemic causation in pyorrhea until they have tied the hands of those willing to strive against the inroads of local irritation, but who were half hearted when told that instrumentation was only *one* of the factors in treatment and they finally became members of the "Nothing can be done" ranks.

The teaching, leading to the results I have referred to, still goes on, and members of our profession who gave first stimulus to the unfortunate tendency and who were Pennsylvanians, are followed by others, still chiefly of the "*Keystone State*."

In the August issue of the DENTAL COSMOS is an article by the Editor, Edw. C. Kirk, D.D.S., Sc.D., upon "*The Constitutional Elements of Certain Dental Disorders*," and to the mind of the writer the argument will continue to augment the ranks of those disbelieving in the local treatment of "*PYORRHEA ALVEOLARIS*."

The writing referred to is exhaustive and ingenious and for the most

part scientific. There are many propositions, however, that I think erroneous, and statements are made regarding what is accepted by scientists as proven in the field of pathology, which, I think, are not proven at all.

The author starts out by saying:

"The whole domain of pathology, and especially of etiology, has been undergoing a process of evolution in which the point of view and correspondingly the point of attack is being rapidly changed from the uncertain position of empiricism to the secure basis of certainty." "*The study of dental disorders from the restricted limitations of their purely local manifestations has done BUT LITTLE FOR THEIR RATIONAL THERAPEUTICS AND LESS FOR THEIR SUCCESSFUL PREVENTION (?)*."

"With all that dentistry has accomplished we are, as yet, lacking in knowledge as to the causes of susceptibility to any of the characteristic and well recognized disorders, or of conditions which secure immunity from them."

This is, indeed, a sad commentary upon the work of dental investigators. It has generally been supposed that at least SOMETHING along the lines of etiology, pathology, prophylaxis and prevention had been quite well established, and that this has been accomplished *not wholly* by "*The study of dental disorders from the restricted limitations of purely local manifestations.*"

What of the work of Magitot, Hugenschmidt, Gallipe, Mournier and others, in France?

What of the work of Miller and others, in Germany?

What of the work of Goadby, Michaels, J. Sims Wallace, Hunter, Leith, Tomes, Salter, Hopewell Smith, Lauder Brunton and Siberth, in England?

What of the work of our own countrymen, Black, J. W. White, Cryer, Brubaker, Williams, Kingsley, Garrettson, Talbot, Edw. C. Kirk and a host of others?

Can it be asserted that they studied dental disorders "*from the restricted limitations of their purely local manifestations*" alone? And is it possible that they have done "*little for their rational therapeutics and less for their successful prevention*"? I THINK NOT. The charge that, heretofore, investigations have been "*from the uncertain basis of empiricism*" can scarcely be justified; nor do we believe that now it is, as Dr. Kirk claims, upon a "*secure basis of certainty.*" Indeed, in the words quoted, he inconsistently admits "that we are, as yet, lacking in knowledge as to the causes of susceptibility in any of the well recognized dental disorders." The statement is not, we believe, capable of proof and is only again quoted to point to the apparent inconsistency of Dr. Kirk's position.

Another statement in the introduction of Dr. Kirk's article says:

"I think we are justified in considering certain dental disorders, more particularly that group of destructive inflammatory processes which we designate collectively as pyorrhea alveolaris, interstitial gingivitis, Riggs' disease, etc. diseases that are manifested in individuals *below the normal standard of health.*" (Italics ours).

This is the assumption upon which the argument of the article is chiefly based and to which we say "*not proven.*"

In a paper upon pyorrhea, at the last meeting of the Kansas Dental Association, the writer made the following statement:

"My continued clinical experience leads me again to say what I have often stated, that the large majority of those who appeal to me for relief from pyorrhea are *remarkably healthy and vigorous*" and careful study and observation brings me to the belief that "*No greater a per cent. of patients suffering from pyorrhea have systemic predisposition than an equal number who come for the ordinary operations of filling teeth, and who have no pyorrhea.*"

Quoting still from my paper at the Kansas meeting, I said:

"In 1884 I read my first paper upon this subject before the Missouri State Dental Association. In 1885 the next effort was before the American Dental Association at Minneapolis, upon "*The Catarrhal Nature of Pyorrhea Alveolaris.*"

At various times since then I have written and spoken upon the subject. During all the intervening years, especially since claims for the systemic origin of the disease have been brought out, I have carefully, and without bias, sought for the cause of pyorrhea, and have kept a record of cases to determine, if possible, in a clinical way, whether systemic predisposing conditions were generally present, and what those systemic conditions were. I found that in an overwhelming majority of cases there could not be found a trace of systemic predisposing conditions which so many authors and writers claim to be present. After promising to read this paper I have again tabulated my cases of pyorrhea treated during a period from January, 1906, to October, 1907, with the following result:

Total number treated, 95. These were divided as follows:

WOMEN

Age over 32.....	46
Age 20 to 30.....	17
Age under 20.....	1

MEN

Age over 32.....	26
Age 20 to 30.....	2

In the total of ninety-five cases the most careful observation, inquiry and history of at least ninety per cent. of them established the fact that only eleven were sufferers from any predisposing condition. In every case where suspicion of predisposition existed, most careful inquiry was prosecuted, and in not a few the family physician was consulted. In five cases the patients voluntarily stated that they were subjects of uric acid poisoning, rheumatism and gout."

Since commencing the writing of this paper, I have gone over my record of new cases since January, 1908. They number 60, of which 52 HAVE NO DISCOVERABLE PREDISPOSITION. These records have not been made

haphazard—have not been made without careful, unprejudiced investigation.

My opinion is that of the entire number of operators who have, like myself, depended upon success from surgical procedures and who have rigidly determined to give the systemic predispositions all the study and consideration justified by clinical experience, and at the same time to severely test the sufficiency of local treatment, have come to the same conclusion.

I am not alone in believing that Dr. Kirk's statement that persons suffering from pyorrhea "ARE BELOW THE NORMAL STATE OF HEALTH" is incorrect. The great majority do not agree with such a statement because experience has proven its fallacy.

Regarding systemic predispositions and their influence in pyorrhea I have this to say:

"If predispositions exist, *see to their correction. That is surgical sense* whether in pyorrhea, catarrh or any similar condition whose exciting cause is local irritation. No inflammation born of irritation in any part of the body can but be affected by prejudiced nutrition if it exists, and the measure of such influence must ever be in proportion to the amount of predisposition—but given these predisposing influences, there is, I am firmly convinced, no inception of gingival disorder without local irritation in one form or another. When the initial lesion is established, if the systemic condition is depraved, the prognosis is unfavorable, and greater care, if possible, must be instituted. This is true in all bodily lesions, be the original irritant mechanical, chemical, septic or of constitutional origin.

Following along the line of argument referred to, and claiming pyorrhea to be caused by the irritating end products of faulty metabolism, and *never once* referring to local causes or local treatment, Dr. Kirk, in the article named, says:—(p. 811).

"The imperfectly oxidized products of nitrogenous metabolism are known to have a predilection for the articular tissues, and the dental ligament, the pericemental membrane, does not escape. Deposition of the irritative suboxidized waste products of nitrogenous metabolism are deposited in this membrane causing irritations of various degrees, even necrobiosis, and establishing local points of diminished resistance, which later become foci of infection through their invasion by pus-producing bacteria; in short, we have a form of alveolar pyorrhea which is a terminal infection to a chronic general nutritional disorder, arthritism."

So we are in this presentation called to believe that pyorrhea may have its inception in the peridental membrane without precedent lesion of a tooth's investment—a proposition so wholly at variance with our belief that *we are at war with the statement*. We have had sent to us scores of cases, supposed to be without local irritation, and not one have we yet seen where the local irritant was not palpable and where relief was not rapidly given and was permanent so long as perfect sanitation ensued.

Dr. Kirk premises that the pericemental membrane is similar to the ligamentous territory invaded by waste end products as in arthritism:

when, according to our study, the pericemental membrane is not analogous to the tissue of the joints where arthritic deposits are found. He calls the pericemental membrane the "Dental ligament." We question the statement. The pericemental membrane differs from the usual ligament binding bones in juxtaposition at the joints. Such ligament is of connective tissue and easily penetrable, while the pericemental membrane is, according to the American Text-Book of Operative Dentistry, "thickly studded with cementoblasts, osteoblasts and osteoclasts." It is in no wise analogous to ordinary ligamentous tissue, nor do we find any authority in text books on Anatomy, Dentistry, Histology, or in dictionaries for the use of the term "Dental Ligament" in referring to the peridental tissue.

Again,—we see in the dissecting room, in the green subject that the peridental membrane and its union with the alveolar process, cementum and tooth, presents a solid impenetrable surface as compared to the joint ligaments with their synovial fluid. In the one case there is a place where waste end products are given an opportunity to deposit, and in the peridental membrane no such space is seen,—at least not until a precedent lesion has existed.

Time does not allow us to notice the paper of Dr. Kirk at greater length and we leave the brief review with two statements—

Instead of it being true that pyorrhea is "*manifested in individuals below the normal standard of health*," clinical experience proves that the GREAT MAJORITY WHO SUFFER FROM THIS DISEASE ARE STRONG AND VITAL.

We do not have to invade the field of metaphysics to find a good reason for this; for we know that the robust and strong, who have scarcely "*had a sick day*," are the ones notoriously careless of their person—they laugh at the ordinary health precautions—their mouths are uncared for, so, as pyorrhea is a filth disease, they suffer.

On the contrary, members of the human family suffering from systemic or specific physical conditions (unless it may be in the lowest classes), are usually monomaniacs upon hygiene and sanitation, no precaution to prevent undue infection but what is scrupulously observed, and the mouth and teeth, with other parts of the body, receive the benefit.

The second statement is that articles in the line of that of Dr. Kirk, tabooing or minimizing the influence of local irritation in the cause of pyorrhea or the benefits of local without systemic treatment, gives to the indolent, and the honestly wavering, a welcome excuse to fold their hands and do nothing when sufferers ask for relief. If these writers, while making investigations, would advise that, in the meantime, while research is being prosecuted into new disease causes, each member of the profession should not fail to institute local measures so well known to be successful; then no one would dare criticise—but the whole intent evidently is to discredit local causes for etiology, and to force the profession and people to the belief that the disease is of obscure origin and demanding intricate therapeutical combinations ere success will come in treatment.

THE USE OF PORCELAIN IN DENTISTRY*

By Chalmers J. Lyons, D. D. S., Jackson, Mich.

THE SUBJECT which your committee has asked me to discuss tonight is "The Use of Porcelain in Dentistry."

It is not without a feeling of considerable embarrassment that I attempt to impress my feeble efforts upon this body, when I see men around me, men who are better qualified to discuss this subject than am I. If, however, some interesting points can be brought out in the discussion of this paper, then I shall feel that my efforts have not been wholly in vain.

Two years ago an entirely different paper on the Uses of Porcelain in Dentistry might have been written, for within this short time the writer feels that the field of porcelain in dentistry has been narrowed down to an extent that has been quite perceptible to one who is daily manipulating it in crown and inlay work. While the field has been narrowed down in crown work by the process of casting in gold the abutments for crowns, and narrowed down in inlay work by the cast gold inlay, and perhaps also by the silicate cements, there still remains a broad field for porcelain that can not be occupied by any of the other materials we now have for the purpose of restoring lost natural tooth structure.

The extent to which the silicate cements have cut in on the field of porcelain, clinical experience is at this time, too limited to justify a definite statement. However, if they prove worthy of being classed among the permanent filling materials, no doubt they will at least be indicated in the small approximal cavities in the anterior teeth, but in the large restorations it is extremely doubtful if they will ever supersede porcelain on account of the opacity of the material.

The successful employment of porcelain in dentistry is dependent on a definite knowledge of the fundamental principles and requirements, and upon the acquirement and development of skill, together with a thorough knowledge of the nature and properties of the material. It is the lack of this knowledge, so essential to the successful application of the material that has caused many failures and subsequent condemnations of porcelain. Dr. Miller has summed up the qualities which the ideal filling material should possess, as follows:

- (1) Sufficient strength: that it may neither break nor wear away under the stress of mastication.
- (2) Chemical indestructibility: that it may remain unaffected by the fluids of the mouth, or by food or drink.
- (3) Permanence of form and volume in the mouth.
- (4) Thermal non-conductivity: that changes of temperature in the mouth may not be conveyed to the pulp.
- (5) A high degree of adaptability: that it may be made to fit the walls of the cavity so closely as to exclude moisture.

*Read before the Michigan First District Dental Society, Dec. 10, 1908.

(6) Color resembling as near as possible the color of the tooth to be filled.

(7) Absence of every quality injurious to the substance of the tooth, including the pulp, or to the mucous membrane or to the general health of the patient.

(8) Ease of insertion.

(9) The least susceptibility to moisture.

The old maxim, "Aim at the highest prize and if there thou fail, thou will surely reach one not far below," is a good one to live by in any of the walks of life and it should be ever in the mind of the conscientious dentist. In every dental operation the highest ideal should be sought for. In performing an operation which is ideal, a material which is as near ideal as it is possible to secure, must be brought into practical application with the highest development of skill and a thorough knowledge of its nature and properties.

It is now pretty generally conceded that the cemented filling makes the nearest approach to the ideal in the large restorations, because the cemented fillings make an absolutely water-tight filling. This I believe to be one reason that recurrent decay is so seldom found around an inlay. The position of the teeth in the mouth, the quality of the tooth structure, and the size of the cavity of decay, are the conditions upon which the adaptability of porcelain fillings depend.

Before the advent of the cast gold inlay, porcelain as a filling material was indicated in many places, which now can be more successfully treated by means of that process.

Because of the friability of the material, porcelain is not indicated in the large occlusal or occluso proximal cavities in bicuspid and molars, except it be for cosmetic effect, for the cast gold inlay in these large cavities has all of the advantages of the porcelain inlay, together with sufficient strength that it will neither break nor wear away under the stress of mastication.

For the large restorations in the anterior teeth the porcelain inlay is very nearly the ideal filling, and when we consider one by one Dr. Miller's requirements of an ideal filling material, we shall find that porcelain meets most of these demands for this class of cavities.

In order to make this ideal filling material into an ideal filling, a most thorough knowledge of the nature of the material must be had that it may be properly fused in order to bring out the required strength and to retain its original color.

Porcelain is a material composed of silicon oxide, the silicate of aluminum, potassium and sodium which becomes a hard, dense mass by the process of fusion. Unless the operation of fusing is successful, the hard dense mass is not procured. Dr. John Q. Byram, in the *Items of Interest*,

says: "The baking or fusing of the porcelain body is one of the most important factors in porcelain, as, the results as a whole depend upon this successful performance."

Density, strength, shade and surface gloss are affected by and dependent on the proper conduct of fusing.

Too rapid heating or over fusing will affect the density and strength by causing porosity and brittleness, and insufficient fusing will impair its crushing strength and gloss.

The given shade of any porcelain depends on its fusing at exactly the heat intended for that special preparation.

The glaze is defective if insufficient heat has been applied and a glass like appearance is imparted to the surface by overfusing.

Shrinkage is a property of porcelain that must be studied in order to be able to bring out the best that is in the material. While shrinkage in porcelain can not be overcome on account of the nature of the material, it can be controlled so that the operator may definitely know how much shrinkage to prepare for in making a crown or inlay.

This can be accomplished by having each mixture of the porcelain body of a uniform consistency, mixing it just as stiff and dry as is possible to manipulate it and by very thorough condensation drive to the surface and absorb the surplus moisture until the piece is hard and firm. By so doing the crown or inlay will take on the minimum amount of shrinkage in fusing, and it will be more homogeneous in texture.

Uncleanliness is frequently responsible for failure in procuring density to the piece, as any foreign matter in the porcelain body or on the platinum upon which the porcelain body is to be placed for fusing, will be turned into gases in the process of fusing, and these gases, in attempting to escape, will cause porosity in the crown or inlay.

The hardest problem to contend with in the use of porcelain is to obtain the proper shades of color, and as the cosmetic value is the chief factor in the indication of porcelain in dentistry, in the use of this material a keen eye for color must be developed, and a most thorough knowledge of color combinations and the influence which affect them must be understood.

In order to comprehend and apply the principles of colors in porcelain work the foundation principles of light have to be reckoned with.

The relation of color to light is much the same as that of music to sound. Color has its many hues, its long scales of tints and shades, its true and false chords.

Mere sound gives us little pleasure; when developed, however, into its highest form, music, we are thrilled.

So in light our enjoyment culminates at the glories of color in a flower or in a sunset or in some of nature's paintings. The harmonies of light have not been as thoroughly studied and classified by scientists as have those of sound. If they had been, the porcelain operator would have less difficulty in imitating the tones of color in the natural teeth.

The ability to imitate the various hues and tones of color of a tooth depends as much upon our susceptibility to the various gradations of color as upon our skill in the manipulation of the materials.

It is a well known fact that there are some individuals with such perfect organs of hearing that they are able to distinguish the slightest sound who yet are so utterly unable to distinguish between two tones or between harmonies and discords of music that they are said to have "no ear." So there are those whose eyes are as well formed for seeing all and distant objects, but who are unable to distinguish between the hues and tones of color and may be said to have "no eye for color."

To successfully comprehend and apply colors in porcelain one must have an eye for color. Then the eye can be developed to distinguish the finer hues and tones only by close application to the work and by observation and scientific study of colors.

The operator need not fail in obtaining the proper colors on account of the chemical change taking place in the pigments during the fusing of the porcelain. There is more danger of failing to bring out the proper tone of color in the process of fusing of porcelain by not obtaining the proper surface gloss, than there is in chemical decomposition of the pigments taking place.

If the surface gloss of porcelain is not the same as that of the natural tooth than the reflection of light will be different and the appearance changed. If the inlay is underfused there will be lacking the required amount of reflection of light, if overfused, and a gloss-like surface produced, the reflection of light will be too great and the inlay will not match the tooth in tone of color, even though all the pigments of color are preserved in normal condition in the porcelain and in the right relation for that particular case.

In building up the porcelain body to form the inlay, doubtless the layer method is the best for the operator who has had long experience and who has made the study of color and color combinations a part of his daily work, but to the man with a limited experience in color combining, it is too indefinite for practical application. Every layer of body in succession is influenced by the underlying layers and the degree of modification in color is principally dependent upon the thickness of each successive layer, the degree of translucency, hue and tone of color and intensity of colors. These are all guides to the final results to one who has had long experience in combining colors, either in chromatic art, or in ceramic art where their experience may signify to them just what tone of color that a definite enamel color applied in a definite thickness of layer will bring out by applying it in a certain position in the inlay over another layer already applied and partially fused.

To the novice or porcelain operator with a limited experience, these things are necessarily indefinite and not positive, and to them in building up in layers, the thickness of the layer, and intensity of tone of color of

that layer is necessarily guess work to a greater or lesser degree, and the final results are many times disagreeably surprising.

To the operator who has not had the opportunity to make a scientific study of color and color combining, the method of building up the inlay in sections will be more positive and more satisfactory. This is accomplished by building in with the foundation body that part of the inlay which is to represent the dentine and fusing to a high biscuit, then build in the gingival third of the inlay with tones of color of the gingival third of the tooth, then the middle third, then the incisal third, not having the layers overlap each other. The inlay is completed with a uniform color. While in a measure this may be considered a layer method, yet the enamel layers do not overlap, and the tone of color is not influenced by an enamel layer underlying.

Under different sources of light by which an inlay is illuminated, it will appear differently regarding the color, and it is possible to produce an inlay which will exactly imitate the hues and tones of color of the natural tooth only under certain definite conditions. The position of the inlay in the tooth with reference to the source of light must always be taken into consideration before attempting to build up the inlay with colors.

An inlay on the distal surface of a tooth should always be made lighter in tone of color than one on the mesial, for the one on the mesial surface receives the rays of light with less obstruction than the one on the distal surface.

If an inlay be so constructed that the light can not penetrate through, unchanged to the cement, the color will not be nearly so greatly modified when an inlay is cemented to place.

The dentine of a natural tooth under a high power glass has the appearance of having a rough surface. The nearer that rough surface can be imitated with the foundation body which is to represent the dentine, the less will the color of the inlay be modified by the cement. The reason of this is that the rays of light are broken up at the junction of the foundation body and enamel, or, at the rough surface, and instead of the rays of light passing straight through the cement, we get diffusion of light and instead of all the light being refracted, reflected and absorbed, a part of it at least, is diffused the same as we have in the normal natural tooth.

This rough surface on the foundation body can be accomplished in one of two ways: either by using Consolidated body for the foundation fixing to a high biscuit, and not any time thereafter fusing, and in using Brewster or S. S. W. body for enamel colors, or it can be left rough by roughing the surface after the surplus water has been absorbed, then by fusing to a high biscuit and at no time over-fusing the foundation body in fusing the enamel body to complete the inlay. I have been able to get splendid results with these methods of procedure in applying the foundation body, and I firmly believe that the nearer we can imitate the appearance of the normal dentine with the foundation body, the nearer we can

come to procuring the color of the natural tooth with our inlays, and that the porcelain inlay will be nearest the ideal filling for the large restorations in the anterior teeth of anything we now have.

The significance and comprehension of cavity preparation plays no little part in obtaining the highest ideal in the use of porcelain as a filling material, and cavities for porcelain inlays must be so formed as not only to retain the inlay but must be shaped in such a manner that the inlay will have sufficient strength when the inlay is set in position. Disregarding the foundation work or principles of cavity preparation for inlays, many dentists have become discouraged because they began to construct inlays before they had studied these principles.

The preparation of many cavities for inlays requires the sacrifice of sound tooth structure in order to secure sufficient strength and the retentive resistance that is necessary, and to obtain proper color effect. Sufficient strength, that it may neither break nor wear away under the stress of mastication is the first of the requirements given of an ideal filling by Dr. Miller. In order to obtain sufficient strength, we have to have sufficient bulk of material in a porcelain filling, and in order to get sufficient bulk in many inlays it is necessary to sacrifice sound tooth structure. It is necessary in many incisal proximal cavities to sacrifice sound tooth structure on the lingual surface for the purpose of forming a step in order to insure the retentive resistance that is necessary to make a permanent operation.

In many cavities, particularly on the labial surfaces, it becomes necessary to sacrifice sound tooth structure to obtain proper color that the light may not penetrate through the inlay to the cement unchanged. Unless the case will justify the sacrifice of enough tooth structure to obtain these requirements, then the porcelain inlay is not indicated.

The principles of retention in the preparation of the cavities for inlays and for fillings are widely different. The preparation of a cavity for an inlay requires more exactness in its details than that for a gold or amalgam filling. Unless the foundation principles of cavity preparation for inlays are firmly grounded and the wide contrast between the preparation of a cavity for a porcelain inlay and that for a filling is recognized, we can not hope to accomplish the highest degree of success in the application and retention of the porcelain inlay.

Some writers and operators advocate the retention of the porcelain inlay by means of close adaptation of the inlay to the cavity walls and a thin film of cement. This method is well and good for cavities existing where no stress is exerted on the inlay during the process of mastication such as in the cervical or buccal cavities, provided the inlay and cavity be grooved before setting the inlay, but for cavities on the occlusal proximal or incisal proximal surfaces, I believe that not only do we have to have close adaptation and frictional retention, but in addition thereto, it is necessary to have mechanical retention if the inlay is expected to take its place with the permanent filling materials, that is, grooves and angles should be made

in the cavity that the inlay when completed will be so shaped that in a measure it will be self-locking in the cavity.

The subject of cavity preparation for inlays is too broad for the time allotted me tonight to take it up in all of its details, so I will take only the time to mention a few of the essential requirements:

1st. The force and direction of occlusion must be taken into consideration before beginning the preparation of the cavity, then by grooves and angles secure all the mechanical retention that is possible without forming undercuts.

2nd. The walls of the cavity should slightly diverge toward the margins.

3rd. The cavity should be as deep as conditions will permit with the pulpal wall parallel to the plane of the surface on which the cavity is located.

4th. All undercuts must be obliterated so as to be able to withdraw the matrix without distorting it.

5th. Frictional retention must be secured by having the pulpal wall as extensive as possible without forming undercuts.

6th. Sufficient working space must be secured before beginning the operation.

If these essential laws are not carried out, nothing can be expected in porcelain inlay work except failure, and if the conditions presented will not justify following out every one of these principles, then, in my opinion, some other material would be indicated for the filling.

(To be continued.)

SURGICAL REMOVAL OF ROOT SURFACE OF PYORRHEA TEETH.*

By T. B. Hartzell, D. D. S., Minneapolis, Minn.

The clinic given by Dr. Hartzell was the surgical removal of the root surface of pyorrhea teeth. Dr. Hartzell believes and teaches that the perpetuating cause of pyorrhea is bacterial growth, and the culture bed in which the bacteria grow is pitted root surface: pitted because it gives attachment to thousands of periodontal membrane fibers, and his clinic illustrated accurately just how to remove this pitted surface, leaving a smooth, white, gleaming surface in its stead. This work is done by the use of planes made so that they can cut only to a certain depth, thus enabling the operator to limit the depth of tissue which he removes. This is extremely important, because immediately underlying the porous surface which gives rise to the periodontal membrane fibers, we have a hard, thin layer of bony

*Clinic given at Semi-Centennial Meeting of the Indiana State Dental Association, 1908.

tissue interposed between the bottoms of the pits in which the peridental membrane fibers grew, and the lacunæ, and the canaliculi of the cementum proper, and it is of the greatest importance that this thin, hard layer be not penetrated by the act of skinning the root surface, else one runs the risk of infecting the cells which fill the lacunæ.

Dr. Hartzell uses for this purpose a set of planes, which accomplish the purpose for which they are designed, with great accuracy. After the removal of the porous surface it is impossible to re-infect a pyorrhea pocket if the root surface has been carefully removed, and the hard layer has not been penetrated. It takes patience to gain the technique to do this thing, but once the technique is gained, the result is certain.

DENTAL FEES.*

By T. R. Buttrick, D. D. S., Detroit, Mich.

THE SUBJECT assigned to me to write upon is one of the most perplexing of all the problems that the dentist has to solve. To the young practitioner it is often a matter of great difficulty to set a proper price upon his work, and while experience, in a measure, at least, overcomes this, still it remains a vexatious question as long as one continues to have patients and charge fees for his services.

This is a subject into which the personal equation enters largely, so that my observations upon it will doubtless fail to coincide with the opinions of many of my hearers and I trust that the discussion of the paper will be full and free, so that I may have the benefit of the opinions and experience of the others present.

Furthermore, the particular kind of practice which each one of you may serve, will modify his ideas, or the application of the principles involved. For instance, one may serve a village clientele, a suburban practice, or be centrally located in some large city. He may serve a rural community, a practice made up largely of mechanics and persons of limited means, or may be fortunate enough to number the rich and powerful among his patients. Every one of you must judge the question from his own standpoint, but I contend that the principles involved are fundamental and it is only the application of them that must vary to suit the existing circumstances or conditions.

In what I am going to say, I simply wish to ask my hearers to judge me fairly and to believe in my sincerity and honesty of purpose and not accuse me of any cant or hypocrisy. No one of us lives up to his own ideals but if he really loves his profession and is working for the good of humanity, he will never get very far astray.

Now, to get down to the subject in hand, "Dental Fees." I do not suppose that any of us have gone into the profession from purely philanthropic motives. We are in the business for the money there is in it, but

*Read before the Michigan State Dental Society, 1908.

at the same time, if one does not enjoy his work without regard to the fees, he will never progress very far in the profession. Unless a man is something more than human, the more money his business yields him, the more interest he will take in it and vice versa, the more interest he takes in his business, the more it will yield him. Now, the question is, how to get the most out of our practice, not only in money but in results of every kind.

I presume that I have made, thus far, at least, an average success in my practice and what follows shall be drawn from my own observations and experiences. It is scarcely probable, however, that all of you will agree with my deductions.

When a young man comes out of college, the first question that confronts him is the one of a choice of location. This should be made with due deliberation, for getting started right is of prime importance. If a man is accustomed to city life and ways, he had best settle in one, while, on the contrary, the man who has always lived in a small town would do well to start in one, at least. Then when once located, do not move about without good reason for so doing. Let people learn where to find you and always be on hand to attend to their wants whenever they present themselves for your services.

When a young man first opens his own office, he is usually not overburdened with patients and he still has a great deal to learn that he can only acquire by practical experience and altogether his time is not of much value. Right here let me emphasize the point that I consider *time* as the large item to be taken into account in setting a price upon one's services.

In the "Items of Interest" for October, 1905, there was an article by Dr. L. K. Fullerton read before the Colorado State Dental Association. I thought it excellent in many respects but I could not agree with the following sentiment: "The dentist who has no higher regard for his calling than to place his earning capacity at merely so much per hour or per day * * * properly belongs to the tin-pail brigade, and should be placed at the rear of a \$1.10 per day pay roll with the section hand on a narrow grade railroad." Now, with all due respect to the author, I think his statement an extreme one and one which will not bear analysis. I am not going to advocate a schedule of wages like the ordinary working man but I do hold to the proposition that *time* is the chief factor to be taken into account. How else, indeed, are we to put an equitable price upon our services? Would the author recommend an X-ray eye that we should see into the patient's pocketbook and "Charge all the traffic will stand"? My preference is for a *square deal* and I think the "golden rule" is just as good in dentistry as in any other line of business, and according to my scheme, the patient himself has much to do with fixing the price of the dentist's services, as you will see presently.

But to return to the subject, the time of the recent graduate may not be worth much, but he has expended his time and money for his education, has purchased his office outfit, his dental equipment, his materials, etc., and

granted that some day he is going to make a dentist, he must fix some price upon his services. Now, it seems to me that at this time, at least, this is best fixed at so much per hour as a unit. I do not think that the price or question of materials (which should always be of the very best) should enter into the consideration at all. Now, let him do his very best for every patient that entrusts himself to his care, so that each one that goes forth from his office will go as a satisfied customer, which, after all, is the very best advertising medium that a dentist can have.

I cannot remember the quotation nor yet be sure of the author, but I think it was Emerson who said something to this effect, "Let a man excel in any one thing, however humble, and though he dwell in the wilderness, the public will soon make a path to his door." A *pleasing fancy*, some of you may say, but let me ask you, did you ever know a really first-class dentist whose time was not fully occupied? There is another old saying that covers this proposition but from the other point of view: "If you want a thing well done, get a busy man to do it."

Now, if the young man has done his work well and pleased his patients, they will return again and send their friends until finally he will have more to do than he can attend to. Then, as he has but one pair of hands and so many working hours of the day, he should raise his price per hour if he would increase his income. This should, of course, be done judiciously, but if the patient is satisfied with the services he receives, he will seldom question the price. In dentistry, more than in most things, "Quality is remembered long after the price is forgotten." Do only one quality of work—the very best you can. Intelligent patients will appreciate this and be willing to pay the price.

Aside from the increased value of one's time from the increased amount of one's business, this raise in price is a fair proportion from another standpoint. If the dentist is any good at all, his practical experience will have increased his speed and he will be able to accomplish more in the same time than he could at first, to say nothing of his better judgment and grasp of the problems that come to him to solve. Then, as more and more people are demanding his services, his time will become more and more valuable and should be charged for accordingly. In this way you see that his patients, in bidding for his services, fix their price, in a measure, at least, for in this world the price of a thing is fixed by what it will bring in the open market.

Now, I think a dentist's price per hour should be his *maximum* price, but this he should modify as circumstances indicate. For instance, he might charge one patient, who could well afford to pay, at the rate of so much per hour, but the next patient might be so circumstanced that to pay this figure would be quite out of the question and he would be entitled to a somewhat lower rate. Now, the first figure would measure the value of the dentist's services and the discount from this, in the case of his less

fortunate brother, would be, let us say, a contribution to humanity on the part of the dentist. But right here let me pause to emphasize this point—in each case the quality of the service should be identical—that is, absolutely the best that the dentist can perform. This seems to me a fair arrangement or, as I said before, a “square deal” for in the very nature of things, services differ from merchandise in this respect and cannot be strictly one price.

To put a price on a gold filling, an amalgam filling or “cleaning teeth” in the vernacular of the public, or, in fact, on any other service in the abstract, seems to me to belittle the profession. Perhaps it might be well to fix a price as a minimum but the particular service should command such a price as is commensurate with the time consumed.

When any one comes to me “a-shopping,” I estimate as well as I am able from his circumstances, etc., the class in which he belongs, or rather, the rate to which he is entitled and tell him that I shall charge him so much per hour for my services, and further say that I shall put a price on each portion of the work as it proceeds and that he is at perfect liberty to stop whenever he does not feel satisfied with this arrangement. If this method does not please him and if confidence is withheld, I tell him that he has come to the wrong dentist and the sooner he seeks another one the better. I think it always better to have an understanding with a patient in advance than to do the work and then have any objection raised to the bill rendered. There is one thing certain, and that is, if a man is going to make a price in advance, he should make it large enough to cover any unforeseen contingencies, otherwise there will always be the temptation to slight the work if conditions arise which make the case much more difficult than originally estimated.

Many of my first patients are still coming to me for their dental services and are paying several times as much per hour for my time as they did some years ago. Whenever I have any objection raised to any bill of mine (which I may say is a very rare thing, indeed), I am reminded of a story that Dr. J. L. Young told of one of his patients who complained that he was charging twice as much for the same service as he had done some years previously. Dr. Young asked him whether he were still getting the same salary that he had at that time. The young man admitted that he was getting more but failed to see how that applied. Dr. Young then told him that he had raised his own salary in the only way that he could. This seemed a new point of view upon the subject and quite satisfied the patient. Whenever any one suggests to me that my methods of charging are somewhat unusual, I tell him that if I were not treating my patients fairly, I should not have more than I could do all the time.

I strive to show a patient that I am not after his money, but actually have his welfare at heart and that after I have gotten his mouth up to par with the work which may be necessary, it gives me far more satisfaction

to hold it there than to allow it to run down again, thereby necessitating another large repair bill later on. I strive to impress upon him, too, that this can actually be accomplished if he will take the proper care of his own mouth that he should, and supplement this with a prophylaxis treatment as often as his particular case may require.

(To be continued.)

ADDITIONAL REPORTS OF CLINICS INDIANA STATE SOCIETY, 1908.

DR. H. W. McMILLAN, D.D.S., ROSEVILLE, ILL.

I gave a series of eighteen exhibits, mounted with plaster of paris, in small square pasteboard boxes.

1. Method of protecting gum margins with pink temporary stopping in treatment of teeth with approximal cavities, as in bicuspid and molars.

2. Method of illustrating to patients the frequency and contagion of caries, in the interproximate space, by imbedding two proximally decayed bicuspid in the plaster of paris.

3. Showed ravages of serumal calculus mounted in plaster, for the instruction of patients.

4. Showing a split molar tooth and the close proximity of central pit to horns of the pulp.

5. Showed defective root canal filling, an occurrence more frequent with all of us than we should like. Patients should be taught how to avoid this necessity and consequent uncertainty.

6. Showed Davis post imbedded in root friction tight in advance of cementation. Used Williams' reamer and mounted pin in pin vise to whet it down to an exact taper on a carborundum hone.

7. Showed No. 12 U. S. Gauge platinoid pin, turned on a jeweler's lathe to an exact taper, for same purpose as Davis post or to give strength and attachment where it is desired to attach a gold crown on a root too short for banding. Properly fitted, it gives sufficient support.

8. Showed post set in crown with Ascher's Artificial Enamel, which is not soluble and gives firm anchorage.

9. Showed method of etching and adapting the Logan crown with the root preparation and instruments, and methods used in securing adaptation.

10. Showed method of lining cavities with inlay cement previous to packing alloy, making filling less conductive and more securely anchored with less liability to a recurrence of decay.

11. Showed a partially developed bicuspid with open shell-like root.

12. Showed relation of temporary molar and its bicuspid successor, with specimens in position.

13. Showed difficulties of root canal filling, using lower first molar root. Patients readily appreciate the difficulty when they see this.

14. Showed an Ascher's Artificial Enamel filling in mesial of a cuspid tooth.

15. Showed a comparison of Ascher's Artificial Enamel and cement in the ammonia test. The cement dissolved in a few hours, while the pellet of enamel is still perfect.

16. Method of removing cuttings, etc., from cavity with pellet of cotton rotated on bur.

17. Showed large cone-shaped bur used in removing epulis, etc., from the deeper pericementum and periosteum.

18. Showed exhibit of four teeth mounted in the plaster. (a) A broken molar, showing pulp chamber; (b) A multirooted tooth, showing varying lengths of roots; (c) A cuspid illustrating mechanical abrasion; (d) A cuspid showing exostosis or excementosis.

I hope to have done some good to some one on such an extended list.

W. H. DEFORD, D.D.S., DES MOINES, IOWA.

This clinic consisted of a course of practical instruction, in Somnoform administration. About twenty-five patients and dentists were anaesthetized, the Stark inhaler being used.

Various types and temperaments were selected, such as the plethoric, anaemic, nervous, tranquil, alcoholic, heart lesions and pathological pulmonary conditions.

Preparation of the patient, both physically and mentally, were fully explained. Various methods of administration to suit the patient in question. Position of the patient in the chair; position of the operator. The assistant and her duties. How the patient should breathe. Suggestions given the patient while being anaesthetized and while returning to consciousness. How to care for the blood after extracting. Method of handling the patient during the resuscitation period. After treatment. Why some men were successful in somnoform administration and others were failures.

L. E. CUSTER, D.D.S., DAYTON, OHIO.

Cast Taggart gold inlays with his electrical device. The gold is melted with the electric arc and when fused is forced into the mould with compressed air. The special advantage with this appliance is the ease of getting the heat. The electric arc gives an estimated heat of 6000° Fah., and this readily melts the gold and even platinum.

T. W. BROPHY, M.D., D.D.S., CHICAGO, ILL.

As a clinic I operated at the St. Vincent's Hospital for closure of cleft palate, on a boy nine years of age. I was assisted by Dr. Oliver, of Indianapolis, and Dr. H. A. Smith, of Cincinnati, Ohio.

M. H. FLETCHER, M.D., D.D.S., CINCINNATI, OHIO.

My clinic consisted in removing dead bone from about the roots of teeth when the tissues were diseased, in what is ordinarily called Pyorrhea

Alveolaris, but from the writer's standpoint should be called Gingivitis, when simply the soft tissues are involved, and when the bone is involved should be called Alveolaris.

The clinic consisted in diagnosing the alveolaris conditions and the removal of dead bone with the Fletcher bone currettes and the Fletcher Alveolaris burs, after which the pockets were washed with antiseptic fluid, the subsequent treatment and the watching of the cases, until recovery, were left in the hands of local men.

G. L. BURKE, D.D.S., OWENSBORO, KY.

My clinic, as announced, "A Wide Range of Possibilities With a Simple Casting Machine," was treated as follows: The clinician started out to show the various and numerous things that could be done with a simple steam casting machine, but he soon saw the endless task set for himself and seemingly wasteful expenditure of energy, and believing there was practically no end to its practical uses, confined himself to those every-day matters that concern the majority of dentists. The following were shown: An incisal restoration, simple and compound inlays, bridge abutments, solid cast crown, discs for detachable crowns, a bridge showing not only the restoration of teeth, but a splint for those lower teeth diseased with pyorrhea. In this bridge were used the ordinary bridge facings as removable facings.

F. L. WRIGHT, D.D.S., WHEELING, W. VA.

This clinic was filling a superior left lateral incisor, distal surface, cavity extending well under gum margin, showing cavity preparation and mixing and manipulation of Ascher's Artificial Enamel.

J. K. CONROY, D.D.S., BELLEVILLE, ILL.

My clinic was as follows. Cavity disto-proximo occlusal, lower second bicuspid, prepared along lines by Dr. G. V. Black. Gingival third filled with non-cohesive foil and balance with cohesive gold.

DR. F. W. TAYLOR, BOONVILLE, IND.

I gave a clinic in painless extracting, using a local anesthetic. The several clinics I gave were very successful.

CARL D. LUCAS, D.D.S., INDIANAPOLIS, IND.

Chair clinic demonstrating a method of operative surgical procedure in treatment of Pyorrhea Alveolaris.

R. SIEGEL, D.D.S., CINCINNATI, OHIO.

My clinic consisted of a device for wrapping smooth broaches in the process of root canal treatments.

The device consists of a small magnet, armature and tapered shaft. The shaft is tapered to such a degree to allow an easy and quick reception and removal of the broach holder. The power is furnished by a small dry cell battery.

The advantages I wish to convey to the profession are:

1. The thoroughness and uniformity of wrapping an absolutely smooth and round broach.

2. The device will wrap such a minute, thin broach, which cannot be wrapped accurately and uniformly by hand.

3. Rapidity of the process, in reducing the time in root canal treatment to less than one-half.

4. An important feature, the broach is wrapped perfectly tight to its finest point, this being essential for two reasons: (a) When drying root canals the cotton will not slip on the broach. (b) The medicament is carried as far as the fine point of the broach will go.

N. S. HOFF, D.D.S., ANN ARBOR, MICH.

My case was the treatment of Pyorrhea Alveolaris. All the teeth were affected and had been treated for several months in the college clinic at Indianapolis, with fairly good results, so far as the anterior teeth were concerned. I directed most of my effort to the badly affected molars, and, of course, cannot tell with what effect, as I have not seen nor heard from the patient since. My treatment was confined to a thorough cleansing and polishing of the roots of these badly affected molars. No remedial treatment, except antiseption lotion were required and none used.

FREDERICK B. MOOREHEAD, D.D.S., CHICAGO, ILL.

This was a surgical clinic.

Patient, male—Age 60.

Married—Father of several children.

Family history—Negative.

Personal history—Has had ordinary diseases of childhood. Has been a strong, robust man. Denies any luetic history.

Habits—Smokes and chews tobacco constantly. Uses tea and coffee moderately. Uses alcohol moderately.

Examination—Physical examination negative.

Present trouble—Small growth on gums in the region of lower right first bicuspid; noticed eight months ago. Growth steadily increased in size to present time. As the teeth became involved in growth they became loose, and were extracted, considerable hemorrhage following their removal. At the present time the growth extends between the bicuspids and extends to the limits of the Alveolus lingually and labially. It presents a peculiar horny appearance. The surface is rough and looks not unlike the integument of a laborer's hand. A number of sinuses lead to small pus pockets in the substance of the Neoplasm. History of some pain and discomfort. No adenopathy. Clinical diagnosis, Papilloma. Frozen sections made at the time, confirm the diagnosis "No Epithelial cells are to be seen beneath the basement membrane." (Report made by a local Pathologist).

Operation—The patient refused a general anaesthetic so the operation was made under the influence of cocaine infiltration anaesthesia. An incision was made from bicuspid to bicuspid through immune territory, anteriorly hugging the lip closely. From the extremities of this, incisions were made in a backward and slightly inward direction. These were joined by

a fourth incision. The entire growth was then removed, including the periosteum and alveolus. The prepared tissue shows the presence of "pearls," mitotic cell division, and epithelial nests in the connective tissue, beneath the epithelial layer. Such a picture strongly suggests a diagnosis of malignancy.

W. A. COSTON, D.D.S., TOPEKA, KAN.

My clinic was an all fused central incisor, Consolidated body, showing exaggerated fan-like shape of tooth and the high coloring. Also a cast bridge carrying two diastoric bicusps. Inlay attachment at one end (an inlay within an inlay), and post and cap attachment at the other.

ADVANTAGES AND BENEFITS OF ASSOCIATIONS*

By Harry B. Holmes, D. D. S., Louisville, Ky.

MY REMARKS in this paper are given, I hope, with all due modesty, for I feel that I am hardly equal to some of the demands made upon me. I certainly would not attempt to instruct many of you in anything that pertains to your profession, nor would you, as sensible men, expect it of me. I have selected a phase pertaining to our professional training, which is absolutely essential to our progress and development, yet a subject which lies outside, as it were, of our general office practice.

SOCIETY NECESSARY TO MAN'S DEVELOPMENT.

To understand man we must look beyond the individual man and his actions or interests, and view him in combination with his fellows.

It is in Society that man first feels what he is; first becomes what he can be. In Society an altogether new set of spiritual activities are evolved in him, and the old *immeasurably* quickened and strengthened. Society is the genial element wherein his nature first lives and grows; the solitary man were but a small portion of himself, and must continue forever folded in, stunted, and only half alive. "Already," says a deep thinker, with more meaning than will disclose itself at once, "my opinion, my conviction, gains infinitely in strength and sureness the moment a second mind has adopted it." Such even in its simplest form, is association; so wondrous the communion of soul with soul, as directed to the mere act of knowing.

SOCIETY AS RELATED TO THE MORAL OR ETHICAL.

In other higher acts the wonder is still more manifest, as in that portion of our being which we name the moral or professionally speaking ethical. But with regard to Ethics, strictly so called, it is in Society, we might almost say, that an ethical courtesy has its origin; here, at least, it

*Read at the Semi-Centennial Jubilee Celebration, Indiana State Dental Association, Indianapolis, Ind., June 4-6, 1908.

takes an altogether new form, and on every side, as in living growth, expands itself. The duties of man to himself, to what is highest in himself, make but the first table of the law; to the first table is now superadded a second, with the duties of man to his neighbor; whereby also the significance of the first now assumes its true importance. Man has joined himself with man; soul reacts on soul; a mystic, miraculous, marvelous union establishes itself. Life in all its elements has become intensified, consecrated. The lightning spark of Thought, generated, or rather say, heaven-kindled, in the solitary mind, awakens its express likeness in another mind, in a thousand other minds, and all blaze up together in combined fire; reverberated from mind to mind, fed also with fresh fuel in each, it acquires incalculable new Light as Thought, incalculable new Heat as converted into action. By and by a common store of thought can accumulate, and be transmitted as an everlasting possession; Literature, whether as preserved in the memory of Bards, in Runes and Hieroglyphs, engraved on stone, or in books of written or printed paper, comes into existence, and begins to play its wondrous part. The devout meditation of the isolated man, acquires certainty, continuance, when it is shared in by his brother-men.

Such is the advantage of associations, the vital articulation of many individuals into a new collective individual; greatly the most important of man's attainment on this earth, that in which, and by virtue of which, all his other attainments and attempts find their arena and have their value.

SOCIETIES AS RELATED TO PROFESSIONAL TRAINING.

So far we have discussed our subject more from a general standpoint. The influence of association relates as well to the Dental world as to the world at large. It was only in the natural order of the development of dentistry that dental societies were formed. There was an impulse born from the longings for broader and better beliefs, for greater and grander achievements. I copy the following from a paper written by Dr. Burton Lee Thorpe, of St. Louis: "The first American dental society for mutual improvement was likely held around a Revolutionary camp-fire during the winters of 1781-2, while Gen. Washington's troops were in winter quarters at Providence, R. I., when Joseph LeMaire, the French patriot and surgeon-dentist, who came to America with the fleet of Count Rochambeau, instructed in the dental art James Gardette, a fellow country-man, and dentist, and Joshia Flagg, who is honored by being the first native born American dentist and grandfather of our late lamented J. Foster Flagg, whose well rounded professional career has recently ended.

"These three patriots improved their time by comparing methods and in practical demonstrations and combined the 'first school of dental instruction' and the first dental society into one, while in winter quarters with Gen. Washington." I quote this in passing, simply to show how early in the development of our profession men realized the advantages

of associations. Since then dentistry has steadily progressed at a rate impossible without the influence of them.

ASSOCIATIONS PRODUCE LIBERALITY.

If we find a town or locality with no dental society we may expect to find jealousies, malice and all manner of bitter feelings existing, but, after the formation of a Society this will clear away like the drops of dew before the morning sun. The essayist doubts not but that some of the more elderly men before him can recall the time when there did not exist that feeling of brotherly love between dentists which is to be characteristic of this meeting. In the early days of dentistry the sentiment of one practitioner toward another was too often one of envy, hatred and ill-feeling. Methods which had proven most satisfactory were the very ones most jealously guarded from their fellow-practitioners. New designs, instruments, remedies and appliances were kept well out of sight of a chance visiting brother dentist. Men who should have been friends and helps were often bitter enemies. What a changed condition greets us today? The happiest man here today is the man who has something which he believes to be new and that will be of interest and advantage to his brother-man. He does not expect compensation, but he esteems it a pleasure and considers it a duty to those whose interests in life are the same as his. 'Tis certain that money does not more burn in a boy's pocket than a new method of dental thought burns in our memory until we can tell it. Just as every new perception is attended with a thrill of pleasure, the imparting of it to others is also attended with added delights. We feel the need of the help, the sympathy and the experiences of others, and realizing this, we are anxious to give to others such as we possess, knowing that we will receive from them some time something in return.

"There is a destiny which makes us brothers;
None takes his way alone;
All that we send into the lives of others,
Comes back into our own."

What has brought about this existing condition? May I answer this question by asking another? What other avenue have we capable of accomplishing such results, save our dental societies? "Oh," says some one, "the dental magazines that are taken do more in advancing dentistry to the masses than any other source." But when we reflect, three-fourths of our dental periodicals are made up from the proceedings of our dental societies, so we are at last forced to admit that the prime factor is the result, either directly or indirectly, of professional associations.

If we are to be benefitted we need to enter more into detail, and that is not practical on the printed page. We need clinics where methods are not only told us, but we see the demonstration of the method in its every minutest detail. A few weeks since, at a joint dental meeting held in our city, composed of the members of different local societies, we had present a dentist from this city, who instructed us in the art of Dental

Prophylaxis. Every dentist in our city who absented himself from that meeting, missed something beneficial. They may have thought, "Oh, the paper, if of any value, will be printed in some Dental Journal, and I will read it which will do as well." Not so. You have missed the enthusiasm which beamed in the clinician's face, the personality of the writer when the essay was read, the varied expressions of countenances as the work proceeded, illy or well, and the vim and energy which was put into the work, the personal magnetism,—all is lost when one is deprived the privilege of witnessing the operation.

LITERATURE NECESSARY.

We do not mean to speak slightly of our dental literature; it accomplishes immense results and its value must not be underestimated; it preserves, in a permanent way, the sayings and doings of the leading lights of our profession, and reaches hundreds who do not have the advantages of dental associations, but it does not produce Society results and fills a place peculiar to itself.

(To be continued.)

THE EDUCATION OF A NATION—TEETH

By George Zederbaum, D. D. S., Charlotte, Mich.

Chairman Committee on Oral Hygiene and Prophylaxis, Michigan State Dental Society.

(Concluded from page 299, April Summary)

I WOULD not, in my enumeration of the various ways of reaching the public, omit the press for anything. This is an agent of incalculable value. It carries far and near, reaching the poor as well as the rich—we must have its support. We must furnish, from time to time, for the publication in Sunday editions of the dailies, in magazines and in journals, articles containing valuable information relative to the necessity for better understanding of the value of, and the care for the teeth. With this in view, I recently wrote the editor of a large monthly journal for ladies, asking if he could use an article on the care of the teeth in prospective motherhood. The reply was something like this: "We beg to inform you that we have secured the services of a woman whose wide experience in that particular is of incalculable value. She will be pleased to instruct all those wishing information of this sort." All I have to say—I am sure that she will not be kept busy answering letters of inquiry. Who would think of such a thing?

It would hardly be fair to Dr. Buckley to entirely ignore the druggist as another medium for our work. Should he discontinue the sale of tooth-ache gums and such like trash and dispense with so many fake dentifrices, which live but a short time and die, only to make room for others, perhaps still worse, he would do much good.

Gentlemen, you will now agree with me that this subject is an inexhaustible one, but is exhausting. I could go on for another hour and even then not cover all the ground—no one could; but I am sure that judging from the formidable array of discussionists, no important point will be omitted.

We come now to the consideration of the most important class of educators for our purpose yet mentioned: namely, the dental profession itself. Without them we could not expect to accomplish anything, and the whole category mentioned above would become absolutely powerless and valueless. The speed of a squadron is no faster than its weakest vessel—so we could not expect good results if we, the representatives of the dental profession, were lacking in energy. Some one has said, that suffering which results and the loss to the nation through the impairment of the health and vigor of the people must be laid, in a great measure, at the door of the dental profession, and I am not so sure but that he who gave utterance to these words, was right. We may even believe Gov. Hastings of Pennsylvania, who said that dentists live in a tooth until they become cranks, for if we lived more on the outside, casting our knowledge broadcast, here and there, we would accomplish far more for the education of the nation than we do now by living on the inside—or, in other words, by only filling the teeth. So, let us carry on a systematic campaign of education in our offices. The dentist who permits the child to go through the important period of adolescence without the intelligent advice, is even more guilty than the parent, for he knows that he is not doing his whole duty to his patient, nor by his noble profession, nor by himself as a representative of it. These youngsters should not be dismissed without a thorough sealing and cleaning, nor without good, sound advice and instruction in the care and attention of the mouth and the teeth need and should and must have at home. Don't we know, don't we see cases every day for which we could do considerable if we stopped but for a moment to explain and to show the reasons for the poor conditions with which we are so frequently confronted? How often we see serious irregularities in the mouths of the youngsters, ought we not explain the reason? Ought we not show the parents what causes such abnormal occlusions? Ought we not insist upon removing the causes of mouth breathing? How often a patient will tell you confidently that she expects her child to outgrow this condition? Little do they know that the longer the trouble the more difficult to correct it. Just impress them with that one thing and you will accomplish a great deal towards our goal—enlightened, healthy, symmetrically featured nation. I ask again, is it not in our power to change these conditions? What about our legislation? Have we not in our ranks enough enthusiastic followers of the prophylactic doctrine, men with broad minds and without a political aspiration, men without stock in some dental manufacturing product, who could and would help to pass bills authorizing the examination and treatment of the teeth of all the school children in the country?

Ought we not be appointed as members of the Board of Health? Are we not in position to show even the physician that the mouth which he has just pronounced in good condition is not so; quite to the contrary—in bad, unsanitary state? What about ourselves? I am sorry, indeed, that the old adage of: “Shoemakers’ children go unshod,” is only too true and applicable to the dentist and his mouth. Nowhere, I believe, you will find mouths in worse conditions than you will among the dentists themselves. Remember, we must practice what we preach. No matter how much we may preach, if we ourselves have not the first evidence of having applied our own remedy to ourselves, our argument “*nihil est.*” I have seen, or I should say, I have smelled, and so have you, bad breaths emanating from unclean, unhealthy mouths of individuals of our own profession, who were, perhaps, demonstrating oral prophylaxis, or even working on you. While they were doing incalculable good to the patient in the chair, I would have preferred to smell second hand onions, or what not, in preference to the breath of some of these men. Dr. John Sayre Marshall says: “The breath not infrequently has more or less unpleasant odor; in many instances this is the result of bad habits, alcoholic state and tobacco being the most common.” Remember, you younger practitioners that bad breath is a great handicap to building up a practice. No matter how educated, nor how skillful you may be, and no matter how well you can instruct your patient—he must see for himself that you are doing for yourself what you wish to see in others. Remember that example is better than precept, and see that not only your own teeth and mouth are clean and healthy, but that those of your wife and your children do not betray you.

Gentlemen, I am sorry that I must draw to an end—perhaps you are not—just a few conclusive remarks and I have done. The contribution to the sermon to which you have just listened will come through my discussionists, and we hope it might be a liberal one, for your preacher needs support,—“Together we stand, separated we fall.”

In the recapitulation of the foregoing, I have outlined what, in my mind, is the most rational course for the educational campaign of the whole nation in the care of the teeth. Briefly told, these mediums are: Prospective Mothers, Parents, (especially Mothers), Physicians in private practice, and as boards of health, Nurses, in private work and in the hospitals, Teachers and Boards of Education, the Press and the Druggists, and, finally, the most important class, the Dentist himself in office and everywhere. Let us be more on the alert to prevent diseases of the dental organs; more alert to educate and to enlighten those in ignorance. 'Tis true, we may have our differences of opinion in regard as to how we should do this, but, one thing we will agree on, and that is that we are confronted by facts everywhere, by the crying need for national education in oral hygiene and dental prophylaxis. Let us have less physical culture and more dental hygiene; a tooth brush and a cake of soap will go decidedly farther. Let us endeavor to appear before the educational bodies, medical societies,

teachers' associations, colleges, seminaries, normal schools, nurses' classes, Y. M. C. A.'s, farmers' institutes, and even if we had access to the churches, no better gospel could be administered by the pastor himself. Let us look to the hygiene in our offices, as well as in our homes, and in all manner of diverse ways which will open to those who will but see. "Knock and the door shall be opened unto you." Let us wake up from our Rip Van Winkle snooze, and get to work for the benefit of mankind and for our own peace of mind. True, the test may be hard, the road may be beset with erities, but listen to the wise words of Booker T. Washington: "Don't get discouraged because we have a hard road to hoe. I like a real hard, tough proposition. It is interesting to work on the hard problems. Any fellow can solve an easy one. You honor the fellow who can work out the tough, perplexing problems. I like to belong to that class that has hard knotty problems to solve. I would not care to live in an age when there was no weak portion of the human race to be lifted up and helped and encouraged. It is only as we meet these great problems and opportunities, that we gain strength."

So, gentlemen, one parting word—whenever in your power to guide the steps of those who trust you, to the knowledge of one of the greatest attributes to health and cleanliness, it is up to us, the dental profession, to educate the whole nation in the care of their teeth.

DISCUSSION.

Dr. Burton Lee Thorpe, St. Louis, Mo.: I heartily endorse the gospel preached by the essayist except two statements, i. e.: the relative value of cow's milk. Recent tests prove goat's milk far superior to cow's. I also differ from the essayist regarding the tooth brush prescribed. Personally, I don't want my patients to have a tooth brush which only has one feature to recommend it, i. e., the hole in the handle. The percentage recited by him, of those needing dental services is not exaggerated. From personal observation, I have found about the same ratio. In the mouths of children from an orphanage, formerly under my care, I found 96 out of a 100 needing treatment. Some knew not the use or functions of a tooth brush. This statement may also be applied to the majority of the poorer class of people. To ascertain the hygienic conditions of the poor in Chicago, I wrote a letter of inquiry to Miss Jane Addams, (Hull House, Chicago), one of the noblest specimens of American womanhood, whose life has been spent in making brighter the environment of the poorer classes, and I received the following reply: "There has never been a systematic instruction in Oral Hygiene given at Hull House. The visiting nurse gives such instructions to individuals whom she visits, and the same is true of some of the resident nurses, but this is all. As to the use of the tooth brush, that varies in the different nationalities. The Russian and Polish Jews and the Italians are not accustomed to the care of their teeth, although they do visit a dentist or dispensary promptly in case of toothache. The German and Irish sometimes use the tooth brush. Perhaps ten per cent. of them, hardly more, I should think." Others of the better class are with the tooth brush like the Georgia Congressman was in regard to the bath tub. Preceding his family to Washington by a fortnight he engaged an apartment for the winter. He wrote his family an enthusiastic description of it, dwelling at length on the new porcelain bath tub. In ending the letter he said, "you know I can hardly wait for Saturday night to come to try the new tub."

Dr. Zederbaum's reference to the "family" tooth brush also is not exaggerated. Why is it the laity do not know the needs of the dental toilet? Simply because we as a profession, have not done our duty. We have preached, but in an indifferent way. Our general lack of interest as a profession in prophylactic treatment is because the average dentist cannot or does not receive proper remuneration for the services rendered. We have "*resolved*" but nothing has come of it. We have allowed a proprietary mouthwash concern, whose products are of questionable therapeutic value, to promulgate a national educational association movement that should rightly have been fostered by our profession. However, no matter what their methods, with their system of examination of the teeth of school children, and their instruction in the use of the tooth brush and dentifrices they will accomplish great good in the public's education. Undoubtedly each of you have seen many so-called cultured and immaculately fastidious patients with filthy mouths, who are in the class of the patient, whose dentist, when examining the mouth, remarked, "I see you had ham for breakfast today," answered, "No! not today, yesterday."

The essayist recommends teaching the parents and the physician, which is good advice. In this advanced and strenuous age of horseless carriages, cowless butter and Battle Creek Unneeded-heap-of-oats, etc., it's a regrettable fact, but statistics prove it, with the upper class of typical American mothers, that they have little need of knowledge of Oral Hygiene and prophylaxis to hand down to their children, for they have no children. It's also a lamentable fact that the average physician knows about as much of dental disorders as a hog does of heaven. And whose fault is it? None other than the dental profession. It's easy to talk about legislation to remedy this matter, but any text book company will soon dispel the idea that this method may easily be brought about, *for they know*. It takes more than the efforts of a handful of dentists to get any legislature to publish a school book on Oral Hygiene, or even incorporate a chapter on this subject in the common school physiology. If the dental profession can raise the necessary funds to lobby such a bill through the various state legislatures, a text book will result, but without sufficient funds, talk of such a proposition is absolutely useless.

But why talk? Why not do something? The only way to educate the public is for the profession to take steps to deliver lectures before teachers, institutes, public and private schools, to medical students and medical societies and the classes of training schools for nurses. By so doing the public will eventually become educated to the great importance of this vital subject. Literature of this subject, carefully prepared, under the auspices of local, state, or the National Dental societies, should also be furnished the press for publication.

To bring this about may I suggest, as a resolution, at the proper time, that this meeting select a committee from each state here represented to bring this result about, acting in conjunction with the Committee on Oral Hygiene of the National Dental Association.

Dr. C. E. Bentley, Chicago, Ill.: I feel very much like apologizing to the essayist, and to Dr. Buckley, if he were here, for attempting to take his place on the program. Dr. Buckley told me before I left Chicago that it was impossible for him to be here before tomorrow morning, and he asked me if I would not make his discussion on the paper. I want to say that the paper is full of suggestions, and while I would like to take issue with some statements if I had time, I will treat the paper in a general way.

The gentleman who preceded me has taken exception to some of the details, but I am going to discuss this paper from a general standpoint. Ladies and Gentlemen, I take it that there is no subject before the entire dental profession today that approaches in importance the one presented by the essayist. A profession is dignified just in proportion as it contributes to the human family, alleviates its ills, and contributes to its

happiness. To any profession where these ideas prevail that profession becomes a benefactor to mankind. The medical atmosphere is surcharged with the idea of prevention; this is the one dominant note today in all medicine, and in the dental profession it has raised its head to the point when we are commencing to attach importance to preventive dentistry, and this is to be the dentistry of the years to come.

Now, in 1899, if you will pardon a personal reference, and possibly it was for this reason that Dr. Buckley asked me to take his place on the program, The Chicago Odontographic Society spent a year making investigations throughout the civilized world with reference to the care of the teeth among children in public schools. All public schools in all cities of over twenty-five thousand inhabitants throughout the civilized world were investigated. We spent a year in these investigations, and the results were published in the *Dental Review* of 1900.

Without attempting to go into detail in regard to this investigation, I can simply say that every country in the civilized world was shouldered and head above America in this regard, and there was not, at that time, any city of any magnitude in this country that had seriously considered the subject. Since that time there has grown a sentiment in the profession, sporadic attempts have been made here and there with reference to the care of the teeth of children in the public schools. Right down here in Milton, Pa., they have examined a large number of children; in Philadelphia they have permitted lectures under the auspices of the Board of Health; in Cleveland, in Rochester, and in Chicago numbers of lectures have also been delivered to the people, to the ordinary people, under the auspices of the Chicago Medical Association. An attempt was also made in New Orleans.

In Louisville, I think an attempt was made by the dentists of that city to examine the teeth of the children in school, but the Board of Health said that they thought it would interfere with the practice of some of the dentists and would not give consent. I trust that the gentlemen from Louisville will go back and try to convince these gentlemen that this is for public good and not for individual good.

I think the most significant article written on this subject was by Richard Grady and delivered before the Boston Dental Association in 1907. It is the most suggestive article that has ever been written on this subject to date, in my opinion.

The Illinois State Dental Association has created a committee appointed for the purpose of putting into form a book, to be written in common language, to be distributed to the patients of the individuals who belong to the Illinois State Dental Association. This committee is composed of competent men, who, in turn, have asked efficient men to write upon the various subjects, articles not exceeding five or six hundred words about the various subjects upon which they are competent to speak. There is to be no name appear on the cover of the book or within its pages, thereby giving no individual any advantage by way of advertising. This book, in order to meet the expenses incident thereto, is sold to the members of the Illinois State Dental Association and they can give or sell it, as they see fit, to their patrons. We expect to spend some money in this propaganda of education, but we believe it is justified. This is one of the means by which, in a small way, this education can proceed.

The whole motive of the paper was publicity. What are some of the media of publicity? First of all, are the members of the dental profession. You must admit with me, however, that about all the education the public is getting upon this subject, aside from the education we give at the chair, is coming from the advertising man. The advertising-man is, in a way, advertising dentistry, but it is not the kind of advertising that the public should have. It should come from the ethical class of men that we consider as dentists. The press then is one of the means for publicity, and it should be used, not for the benefit of any one man over and above another, but for the education of the people in general.

The lecture platform is a splendid means to educate the people with reference to

their dental needs, and I believe that the sentiment of the paper is that we should go before Teachers' Institutes and Sunday School Institutes, that will permit us, and give them lectures on the needs of oral hygiene, and distribute literature, as has been advanced by the last speaker. This, it seems to me, would be an excellent means of advertising the needs, the dental needs, of the people.

With reference to medical colleges, I want to say that we should not stop short of our propaganda until we have obtained a chair of Oral Surgery in the medical colleges. There was a time when, in the city of Chicago, there was not a medical college that did not have a chair of Oral Surgery, and there are about two colleges in Chicago today that have this chair. There has been a marked antipathy against this class of teaching upon the part of the faculty and students, but I think we can show them the importance and need of this work.

There are a number of training schools for nurses in Chicago today that have this chair in their curriculum. All of these are the media of publicity and these are they that we can utilize through co-operation and organization. Individual effort is like a tiny drop in the sea; it needs organization. We are all interdependent, and not dependent, and whether we choose or not, failure or success belongs to us, and it is either progression or retrogression. The indolent man we pay for; the industrious man gives to our credit, therefore, ladies and gentlemen, we should unite. Co-operation seems to be the keynote of the hour.

Dr. F. O. Hetrick, Ottawa, Kan.: It has been a joy to me to read Dr. Zederbaum's paper. If there is one thing above another that our profession has failed in, it is its obligation to the general public. Practically nothing has been done to educate the mass of the people in the importance of maintaining sanitary decency in the oral cavity.

There have been a few enthusiasts who have brought the matter to the attention of state and national dental societies; but so far their reports have died in some committee's hands. Procrastination seems to be the policy, until we can agree. It is about time we could agree to educate people to keep their mouths clean.

There is a report from the Committee on Oral Hygiene and Prophylaxis, in the hands of a special committee from the National Dental Association. This report is in the form of the manuscript for a book, designed for the education of the public and to be authorized by the National Dental Association.

It is to be hoped there will be a favorable or substitute report at the next meeting of the National.

The essayist speaks of the time to begin to educate being with our great grandmothers. At the rate we have been going, we will just about begin to educate our great-great-great-granddaughters. If we can do no more, we had better wake up to educating the youngsters of now.

I heartily agree with the essayist in that we should have the hearty co-operation of the medical profession. But we must not wait for that. Get that as fast as we can, but securing the assistance and support of school teachers and the press is most important.

Dr. Zederbaum has not emphasized the press as I should like to have had him do. It reaches places where even the school teachers do not touch.

We are sure the doctor will not be discouraged because the editor of some woman's journal turned him over to the tender mercies of some lady, when he wrote suggesting they have magazine articles along certain lines. Try some other magazine; and if need be, another. This matter must be brought before the public.

He suggests recommending some book for the enlightenment of school teachers. Just what book? He must write it. It has not been written yet.

There has been no more important matter brought before the attention of the dental profession than the one you have just had the privilege of listening to. What

are you going to do about it? As usual, nothing? Or will you realize that the *time has arrived* to do something definite and tangible? Let us not wait for the child unborn, but do something *now*. Every means of publicity should be used, but especial emphasis should be brought upon the daily and weekly newspaper and secure their hearty co-operation. It can be done. It *must* be done.

Dr. G. W. Emery, Newark, O.: I will take but a few minutes of your time, but I want to clear up a little misunderstanding in regard to what was said by the last speaker. I have just returned from a year's trip in Ireland, Scotland and the Isle of Man.

I had in my class in Glasgow twenty-three dentists, several of whom were Englishmen from Manchester and Liverpool, the rest being Scotch—Scotch, as they call it. I had in Belfast, a city of six hundred thousand population—Glasgow being the second city of the continent—seventeen Irish dentists, two of whom claimed to have been educated in our school at Philadelphia, and I want to say to you that I am glad this is a place for the education of *A* people instead of *The* people. A people—I will apply this to the dental profession, and that is where the education ought to begin. Out of fifty-two dentists that I taught in the old country last year, there was not one single case of oral cavity in the fifty-two that was hygienic—not one; there was not a mouth among that number in the dental profession that I taught that you would say had one single semblance of sanitation; you would not say, if you were to look over those dentists, that they were the proper people to work for your mother and your children. I wish you could see the children's teeth in Belfast, Ireland, the largest city of that country, much larger than the capital. They pay no attention whatever to their teeth, and neither do the adults. You can go along the streets of Belfast and see what they will tell you in this country are pretty Irish maidens. They have a snag here and there; they have the rest broken off at the gingival border. I am direct from there—I am not getting it from the dentist at the dental association.

I talked with Dr. Miller two years ago. He was born in my county, Licking county, Ohio, and is buried in my city. He tells a very different thing in regard to the examinations of the school children and the people, in general, as regards hygienic conditions. Gentlemen, there is no country on the face of the globe that has progressed one-quarter the distance in dentistry that America has. King Edward, himself, has a mouth that you would say needed repair exceedingly bad, as well as Queen Alexandria. I met them both at the Dublin Exposition on the 18th day of last July. I had the privilege of looking over a regiment of Kilts Highlanders, the very best Scotch soldiers, the brawniest men that that country produces, and they are what the Irish call the "petticoats," and they are, almost to a man, affected with pyorrhea. One of them said that he was glad of one thing, and that was that he had two teeth that met.

Now, don't let people from investigations of publications make you dentists believe that Britain, or Ireland, or Scotland, or England, have, in any way, better dentists, or can compete with Indiana, Ohio, Kentucky, Michigan or Illinois. They cannot do it. We have more education in one block in Chicago than they have in the whole British Empire. The education of a people—the people are the rest of the people. We all admire the sentiment of the paper, and the way that it was intended and the way it is presented. These are the educational points for those of us who attend these associations. You remember a remark I made—permit me to give you a gift of my gab—seven years ago; what I said about dentists getting nervous, and what was the cause of it?

I want to talk to you a little bit about the Isle of Man. You would think that it was Britain's beauty spot, but it does not belong to Britain. I went over to Douglas, its capital, a city of nineteen thousand—the population of the Isle is about fifty-five thousand—drove over the Island in a carriage. In Douglas I met a dentist who was educated in the British Dental School in London, not in the Irish branch, of which H. E. Allen is the registrar-in-chief. He wanted me to give him some lessons, because

he did not have nerve enough to go over to Belfast and appear before the class. He wanted me to teach him something about a hollow gold inlay. He expected to stand over the case and look on, but you see it is a different thing to put them in. You know how the sweat runs down your nose when the gold filling begins to rock, don't you? We all know about it. I gave him Brophy's instructions,—this was Dr. Veach. He furnished a patient and I put in a hollow gold inlay. It is done just like a porcelain inlay. I put one in the mesial surface of a broken-down first molar. That was all very well, but he had instructed that patient to have in his pocket what we would call a cracker. It resembles a biscuit in size, and is just about as hard as hardtack. I had the inlay complete, and he gave it the proper time to set. Then he had the patient bite the biscuit, and afterwards took his mirror and examined the inlay, which he pronounced to be a very strong piece of work. The following Tuesday he was to do the work and I was to look on. He had the patient, a very good subject too, and he sweat like you and I have; and he SWEAT, too, but he could not even make the matrix stay in the cavity, to say nothing about finishing it, and he could not see the reason either.

They can do the work in the journals, but it is a very different thing to do the work than it is to tell about it. I am from Missouri; I would like to have you show me the man who can show a gathering such as Indiana has here today in Indianapolis. I could not teach that man how to make a gold inlay. It is just as impossible as it is for me to play a piano, but you can teach those people dentistry.

Some dentist reported me as practicing dentistry illegally in Ireland, and the authority wrote me a letter and I went down to Dublin to see him. I said to him, "Doctor, what are the conditions of your law?" and he said, "We do not recognize any of your papers. We do not recognize your diplomas or certificates here in our country, and yet you repeatedly violate our laws in practicing dentistry." I said, "I have never displayed any signs at all; I was only trying to teach the dentists. I was sent over here for that purpose." I asked him upon what conditions he would allow me to apply for a license, and whether at all, and he said I would have to go a year to the Royal College at Dublin. "Well," I said, "would you want to go to a college where you could teach the faculty?" He said, "I do not know whether you can teach the faculty or not." I said, "If I can prove to you that I can teach the faculty, will you give me a certificate?" and he would not do it. I wanted to take an examination with an average of eighty, and he would not allow it. So you see there is a great antipathy, when they find out that you are an American. They just swell up like a toad.

When going into an office, the first thing you do is to touch a button, and in about fifteen or twenty minutes, or something like that, they stick out a silver plate. You put your card on it, and in about fifteen or twenty minutes more you are turned into the reception room, and it does not make any difference how hard your tooth aches. Presently the dentist comes out with a Prince Albert coat on and a plug hat, and says that he will see you in a few minutes, and if you see him again in another half hour you are in luck. You finally get in there after you have gone through a rigmarole. "Walk In" is on the door, of course, but you have to work your way in like you do in a Masonic lodge or some other place. You have got to know the signs on the door to get in, and then when you do get in you do not get anything. They cannot extract a tooth and do it right; they cannot do anything, consequently the Old Country is just as full of people with one tooth out and one tooth in as a dog is full of fleas. The best tooth I saw while in Britain was in the mouth of a shark that they had caught. I will venture to say that there are not ten sound mouths, with sound teeth, in six hundred thousand people in Belfast. Why, they do not know the first rudiments of dentistry. Don't let the essayist or the arguments on same make you believe that you are not leaders in your profession in the world. That is all there is to it.

Dr. George Zederbaum, Charlotte, Mich. (Closing the discussion): I am lucky not to receive as much roasting by mouth as perhaps I deserved—but I presume that

the lateness of the hour and the extreme heat had much to do with the closing of the discussions by the presiding officer at this time. There are a few things I wish to comment upon and then I am done. Dr. Thorpe has evidently misunderstood the object I had when I at all mentioned the prophylactic brush. I merely wished to call the attention to the great difference between the cheaper and the costlier grades of tooth brushes and did not intend to advertise the prophylactic brush any more so than I would any brush with at least some pretension of being made under sanitary conditions. At any rate, geometrically speaking, Dr. Thorpe has his dates slightly mixed when he says that he can endorse only one point about the prophylactic brush, and that is the hole in the handle. I wonder if any one else present would call a hole a point! Dr. Bentley very ably discussed my paper and in the main he is of like opinion as myself, differing only on the point of my assertion that I believe, we, as the human race are somewhat degenerating. Dr. Talbot need not influence my thoughts one way or another; I base my assertion upon observation of prevalent conditions. Our present mode of living, manner of dress and eating, manner in which we work and the character of our amusements, all have much to do with weakening of our framework and lessening of our endurance and resistance to decay. We positively know that the fourth molars are obsolete now and that the third molar is gradually but surely becoming so. You say we don't need it, that is true, I will admit that we may not need them; but why? Because our prepared and predigested and prechewed foods of today do not require the vigorous, healthy masticating which our forefathers had to do. Our features are smaller and our framework throughout corresponds to the lack of development in the jaws. Where are our buxom maidens with healthy glow on their cheeks, strong robust frames and healthful laughs? These are very few and far between now. You will find by far more of the hollow chested, underfed, malnourished kind; creatures who become the mothers of the future generations. It is to them that we must first make our appeals for the betterment of health. It was Dr. Thorpe, I believe, who mentioned something about the feeding of infants on goat's milk. He may be right, and I realize that in this age of the "horseless" carriage and the "cowless" butter, etc., almost anything is possible, and that we might also concoct "goatless" goat's milk, but that will be the only way we could furnish goat's milk to all the infants of our country. Besides, if I am not mistaken, the medical authorities claim nothing superior to buttermilk for such feeding, and that is obtainable everywhere, even in Indianapolis.

We heard considerable from the much traveled Doctor, whose name I was unable to learn. He covered the ground immensely and I am glad to know that since his return, both the King and the Queen of England are wearing crowns! But all jokes aside, gentlemen, we must strive to educate the people relative to the proper care of their teeth. I know this is a vast undertaking, but, co-operation and earnestness of endeavor and love for our profession and fellow-men ought to be stimulus enough to make every man do his best; thinking and teaching the people that in order to have normal growth, normal mental development and normal health, they must have healthy mouths and teeth. Let us impress them that all unhealthy mouths belong to sick, unhealthy individuals and that healthy people always have clean and healthy mouths and teeth. I thank you.

We live in deeds; in thoughts, not breaths;
 In feelings, not in figures on a dial.
 We should count time by heart throbs, Be
 most lives
 Who thinks most, feels the noblest, acts
 the best.
 —Bailey.

DENTAL SCIENCE AND LITERATURE.

By G. C. Bowles, D. D. S., Chairman Com., Detroit, Mich.

(Continued from page 302 April Summary.)

IN THE December, '07, *Cosmos*, Dr. Julio Endelman has an instructive paper on "The Pathology of Pericemental Inflammation." The tissue changes occurring from the inception to the conclusion of the inflammatory process are followed step by step as they have been revealed by recent studies in cellular pathology and bacteriology aided by physiologic and pathologic chemistry. The article may well be referred to by any one wishing a clear and concise statement of the present understanding of this subject. Under the sub-heading "Remote Consequences," the author says "Owing to the intimate relations of the teeth and soft tissues of the mouth with practically every organ of the body, it not infrequently happens that pericemental infections cause serious, and, at times, fatal consequences. We have seen traced to this source disorders of the intestinal tract leading to pernicious anemia, and of the respiratory tract leading to purulent broncho-pneumonia. Septicemia and pyemia ending in death have also been caused by pericemental infections as well as disturbances of the eye, ear, nose, throat, antrum: necrosis, partial and complete, of the lower jaw, facial paralysis, mandibular trismus, etc." He follows with a record of twenty-one serious clinical cases, two of them resulting fatally, all due to alveolar abscesses. In conclusion he says, "In the discussion of the remote consequences of pericemental infection, the writer's purpose has been simply to call attention, with the assistance of clinical observations, to the necessity of viewing pericemental infection in the light of the serious disturbance it really is, and not mainly as a purely local disorder."

In the same number, and written with the same purpose, is a paper by Dr. George Mitchell, entitled "Alveolar Infections: Extractions vs. Retention." After reviewing the literature on the subject in which there is a general agreement that "healthy oral cavities and their adnexa are especially exempt from infectious processes following injuries, while an oral cavity, which is septic from an abscessed tooth traumatism without preliminary and after treatment, is very dangerous on account of the possibility of extension of the suppuration to some distant part; and a possibility of severe intoxications following suppuration of the gingivodental regions explains the necessity of combating, by all the means at our disposal, any suppuration, whatever be its degree of intensity." He follows with letters from Drs. G. V. Black, E. C. Kirk, G. V. I. Brown, R. Ottolengui, R. H. Hofheinz and M. I. Shamberg, received in reply to the following questions:

1. What, from your experience and observation, is your opinion of the following? "There are infections following the removal of abscessed teeth. Patients die, and the cases are not reported * * * they are entered

at our hospitals as cases of pneumonia, but they are cases of septic pneumonia, resulting from abscessed teeth.") Dr. Robert T. Morris, *Dental Cosmos*, July, '04.

2. Do you, (or did you) ever hesitate to extract in cases of pericementitis and alveolar abscess, or any acute alveolar infection?

3. If so, in what instances and for what reasons?

4. Do you differentiate in extraction between pericemental or alveolar infections caused by colds, and those due to other causes?

5. Do you think there is any danger attending extractions at any stage of alveolar infection?

6. If so, what dangers, and for what reasons?

The following reply of Dr. Hofheinz is very concise and embodies substantially the answers of all the others.

1. There is infinitely more danger in leaving an abscessed tooth in its socket too long than there can be in its removal.

2. I should never hesitate to extract in cases of pericementitis or alveolar abscess, providing I could not by other means restore the surrounding tissues to a normal condition.

3. Causes of all pus-formation should be well and carefully differentiated. If due to a local affection, cure can certainly be much more easily obtained than if it were due to a systemic diathesis.

4. I can see no danger in extraction. It means, in most cases, simply the removal of the cause the rational treatment of all disease. Septic pneumonia, embolic pneumonia, if at all due to abscessed teeth, are not due to the extraction per se. They are due to the fact that the teeth were not extracted in time, thus allowing the pus to be absorbed, and to produce a remote septic condition."

Dr. Black says, in part, in answer to the fifth question, "There is often danger of septicemia resulting from alveolar infection. I think that the extraction of the teeth in these conditions is the best way to avert the danger, though it may not always be successful. There are quite a number of deaths occurring from infections in connection with alveolar abscesses that are not reported as such. Several have occurred in Chicago. In my own practice, death has been very narrowly averted in a considerable number of cases. The danger to life in alveolar abscess is not at all sufficiently recognized."

In conclusion the writer calls attention to the necessity for the thorough sterilization of the mouth before the extraction of an abscessed tooth, also the complete sterilization of all instruments employed in the operation. The wound should be treated antiseptically until all possibility of infection is passed. "To neglect this important operation is criminal malpractice."

Because the vast majority of cases of alveolar abscess terminate without recognized untoward results, I believe we have come to look upon this condition all too lightly. In its treatment it rarely occurs to any of us,

if, indeed, it is known to many, how really serious the matter is. The facts should awaken us from our slipshod apathetic methods to an acute realization of all the possibilities. Let each one of us pause and reflect on our ability to recognize, avert, or combat the possibly grave consequences which, at any moment, may confront us. Let us be assured that in our future treatment of pulpless teeth the possibility of subsequent abscess will be minimized by the most conscientious and informed effort of which we are capable. Let us examine the mouths of our patients and remove every wreck of a tooth beyond the probability of abscessing. The common advice, "let it stay until it makes trouble" should at once be corrected to "let it be removed before it makes trouble." The dominant note in dentistry today is "Prophylaxis." It has a broad field for operation in this direction. Perhaps the assertion that prophylaxis is the dominant note in dentistry today, should be modified by the statement that at least it should be, and in reality is rapidly so becoming. At present it is a lusty infant, already showing its possibilities, and destined, its advocates believe, to revolutionize future dental practice.

The indications are many, however, that the prophylaxis idea is extending far beyond the boundaries laid down by its most strenuous advocate, Dr. D. D. Smith. The crusade of the orangewood point is doing, and will continue to do, a good work, but it is an adjunct, not a finality. Few are satisfied that either caries or pyorrhea alveolaris are wholly filth diseases. Both complaints are found in the best cared-for mouths and the least cared-for mouths are frequently immune to both. To find and control the underlying cause is the task now engaging the efforts of some of our foremost investigators. In this connection the report of Dr. Immanuel Muntz, chairman of the committee of scientific research for the Dental Society of the state of New York, *Cosmos*, March, '08, page 263, is very interesting. The work of the committee is a continuation of the investigations begun four years ago by a former committee consisting of Drs. Frank W. Low and J. Wright Beach, of Buffalo, to determine what chemical constituents of the saliva influences immunity to decay. A more detailed account of this work, and the conclusions drawn therefrom, appears in a paper entitled, "The Saliva and Tooth Decay," by Dr. Beach, *Cosmos*, May, '08.

Dr. Beach quotes from Dr. Low as follows: "Beginning my labors in the line of investigation to determine, if possible, what chemical constituents of the saliva were most persistently abundant in the mouths of individuals having remarkably poor teeth, I found none that were invariably present * * * Failing in my quest, I began to investigate the saliva of individuals having remarkably good teeth. Then it was that I made, what I now believe to be to dentistry an important discovery, viz., namely, the almost invariable presence of generous provings of potassium sulfoeyanate * * * I have examined the saliva of at least several hundred individuals. Among those having remarkably poor teeth I have found potassium sulfoeyanate conspicuous by its absence. On the other hand, with but few

exceptions, I never failed to find abundant potassium sulfoeyanate in the mouths where remarkably good teeth were exhibited. The bacteria of decay find lodgment wherever there is roughened and defective enamel. According to Black, "Whenever decay occurs elsewhere upon the teeth it is because the bacteria, themselves, under favorable conditions, have the ability to form small films or plaques of a gelatinoid character glued upon some accessible surface of the tooth where they remain undisturbed for a sufficient time to allow the bacteria imbedded in them to corrode the enamel surface!" The theory that accounts for the absence of these plaques in the saliva of individuals who have marked provings of potassium sulfoeyanate rests on the fact that potassium sulfoeyanate is a powerful solvent of all gelatinous substances.

"Experiments which I have personally conducted have proved (1) That saliva from the mouths of patients having an abundance of potassium sulfoeyanate will dissolve gelatin to double the quantity of such as have no potassium sulfoeyanate. (2) That during a considerable immunity from decay the saliva shows strong potassium sulfoeyanate provings, while in the same mouth, during a considerable period of rapid decay, the saliva contained no potassium sulfoeyanate. (3) That in a mouth where decay was rapidly progressive, and the saliva showed no potassium sulfoeyanate, the administration, by the stomach, of that compound, one-half grain per diem (Parke, Davis & Co.'s compressed tablets), resulted in the abundant presence of potassium sulfoeyanate, making the saliva resemble in appearance that from other mouths where no decay was present.

"The tincture of iron chlorid as prescribed by physicians will neutralize the action of potassium sulfoeyanate in the saliva. (Make a careful note of this fact).

This paper and its discussion should receive a careful reading by all interested in the broader prophylaxis, as should also a paper by Dr. Edward C. Kirk, entitled "The Nutritional Question as Related to Dental Pathology," *Dental Brief*, October, '07, in which the composition of the saliva, in its relation to caries and other dental pathological conditions, is considered. Dr. Kirk states that, "the composition of the mixed saliva changes from time to time, and that it is an index of the nutritional state at any given time, * * * and that the nutritional state resulting from a given food habit is an important factor, if not the most important factor, in the problem of susceptibility or immunity to dental caries." Therefore, before our prophylactic measures will really prevent, "we must learn to so change the composition of the body juices as to develop a maximum of vital resistance to disease invasion, on the principle that good health is the best prophylactic against disease."

In the meantime, the ravages of decay are rampant and reparative processes imperatively demanded. For the past few years inlays have had the field. Just now the gold inlay is having its inning and the rooters are making such a din that for the average man scarcely anything else

can be heard. It is not the purpose of this paper to go into a subject of so "practical" a nature as gold inlays, it being believed that all who hear or read this report are keenly alive to the "doings" in this direction. But it is interesting to note, in passing, the revolution Dr. Taggart has wrought in current dental literature by the introduction of the cast inlay method. Up to within a month or two the magazines have been literally filled with the thousand and one best ways of making gold inlays by the matrix method. With his wax model and casting device Dr. Taggart has, with one stroke, rendered everything previously written on the subject of gold inlays, valueless, save as ancient history. This, of course, does not apply to cavity preparation, which for both methods remains the same. Today there are as many best devices for reproducing the wax model as a year ago there were ways of making and filling the matrix.

In a splendid paper on this subject read before the Second District Dental Society of New York, and appearing in the April, '08 Items, Dr. Taggart, in closing its discussion, said, "When I come before you and hear words from men I never saw before, praising the method and the system, and saying they had attained more beautiful results than they ever had before, I feel that I am abundantly repaid. There have been several attempts to refer to the commercial side, but the commercial end has never entered my head. It has been "how much could I do for humanity and my brothers." Alike, by these most generous and exalted sentiments and his revolutionary invention Dr. Wm. H. Taggart has rendered dentistry his everlasting debtor.

Growing out of Dr. Taggart's contribution is a series of investigations conducted by Dr. Weston A. Price, of Cleveland, into the hitherto unexplored realm of the contraction of metals used in dentistry, "on cooling from their melting or freezing point to ordinary temperature." His paper, "The Laws of Determining Casting or Fusing Results, Their Control and a New and Rational Technique," Items, May, '08, contains data invaluable in the perfecting of this new art. By a specially constructed instrument capable of measuring to the hundred-thousandth of an inch, connected with an electric heating device and a pyrometer, Dr. Price has determined, for instance, that 24k. gold at atmospheric pressure contracts on cooling from the melting point, a trifle over twenty-two thousandth of an inch per linear inch, but the contraction decreases with the increase of pressure, and at a pressure of $5\frac{1}{2}$ lbs. the contraction is reduced to thirteen-thousandth or nearly one-half, and concludes that "to secure the least contraction we must use as high pressure as possible without producing distortion of the investment." With the 16 lbs. pressure, the actual pressure on an inlay $\frac{1}{8}$ of an inch square is less than $\frac{1}{8}$ of a pound. Inlays cast at low pressure in an investment mixed soft and slowly dried out, contract over forty thousandths, or over four per cent. The contraction of such investment is as much as twenty-five thousandths. "All the investments have a very large total contraction on cooling. To overcome the contraction

of the gold, the investing material should expand fifteen thousandths at not to exceed 700 degrees, at which temperature all are very far short, the best having only half expansion enough and those having the most, have so little strength, that high pressure is likely to distort them." These defects the author believes he has overcome by a technique which he describes and an "artificial stone," a modified silicate cement, capable of resisting any required heat and pressure, from which he makes a cast in which the wax is formed. This artificial stone cast, containing the wax model, is invested, and the gold under high pressure forced into it. The resulting inlay from being cast in an investment, the cavity aspect of which is as hard as stone and which expands on heating almost enough to compensate for the contraction of the gold, is well nigh perfect.

"While the writer fully realizes that he probably could turn the control of the composition and manufacture of this model material to considerable financial gain, it would be poor compensation for midnight oil, compared as to giving it as unhampered and quickly as possible to the profession and humanity, who, he believes, will be saved more suffering and discomfort through its means than the writer could relieve in a score of life times binding up wounds." This has a splendid ring and again demonstrates the difference between the competitive warfare dominating the commercial world and the co-operative spirit, the animating ideal of the professional calling. The benefits of such devotion and self sacrifice on the part of our leaders accrues to all in the profession and should render every man capable of having a spark of appreciation aroused within him, willing and eager to contribute all that within him lies for the further establishing of our calling upon the broadest professional lines.

(To be continued.)

NATIONAL DENTAL ASSOCIATION MEETING A SUMMARY REPORT

By H. C. Brown, D. D. S., Columbus, Ohio

THE THIRTEENTH annual meeting of the National Dental Association was held at Birmingham, Ala., March 30th to April 2d inclusive, and was an especially interesting meeting in many respects.

In the first place the attendance was much larger than was expected in view of the fact of the much earlier date than heretofore, which necessarily prevented the National Association of Dental Examiners and the National Faculty Association from meeting in conjunction therewith, but the advantage of an early meeting, when the Association goes south, is worthy of the most careful consideration.

The papers read before the general session were quite interesting and

elicited enthusiastic discussion, while those read before the sections were well received and thoroughly discussed.

The president's address contained a number of timely suggestions dealing with the important questions before the profession today. The committee appointed to report on this address emphasized the necessity of a systematic effort to secure the co-operation of the various State Dental Societies along the line of broader National Dental Association, as follows: "We, your committee, urge the necessity of a consecutive and consistent effort on the part of the officers and members of the Association, to establish a loyal relation between our National body and the various State Dental Associations throughout the country, and that especially the corresponding secretary, who is elected this year, shall undertake a systematic correspondence with the officers of said State Societies and where possible visit them as a representative of this Association and present the claims and advocate the interests of our National body."

The report of the committee on the *National Dental Journal* gave evidence of the interest taken and the time given to their work, and it was decided by the Association to begin the publication of such a Journal commencing with the October, 1910, issue. The interest manifested in this was such as to give evidence of general support and interest in a National Dental Journal.

The committee appointed last year on revision of Constitution and By-Laws made an extended report and presented a number of amendments embodying a liberal plan of reorganization. Copies, with the proposed changes, are to be printed and mailed to the membership at an early date, which will give ample opportunity to thoroughly understand same before final action is taken at the 1910 meeting.

One particular amendment presented by the committee, and which received much favorable comment, makes provision for State Dental Societies becoming a component part of the National Association, and when such societies join in a body, the dues of the membership of the State Society shall be two dollars per year, which entitles such members to the *National Dental Journal* without additional cost, while the subscription price of the *Journal*, to other than members of the Association, is two dollars. Thus, it will be seen that there is a general disposition to make our National Association a truly representative body of the dental profession; therefore, let us all do our part to accomplish this much desired end, thereby increasing our usefulness in many directions.

The legislative committee reported that every effort had been made to secure Army and Navy dental legislation, through the last congress, but that conditions arose, over which they had no control, which defeated their purposes.

A new legislative committee was appointed, consisting of Dr. Wm. Crenshaw, of Atlanta, Ga., and Dr. W. H. De Ford, of Des Moines, Iowa, together with the vice-presidents, the two secretaries and the treasurer.

The Navy Dental Bill, introduced March 29th, 1909, by Senator Charles Dick of Ohio, was endorsed, and a vote of thanks extended to the Senator, and others, for their generous support in our efforts to secure Army and Navy dental legislation. As an Ohioan, and a member of the present and past legislative committee, I am pleased to say that our Senators and Congressmen have been loyal to our cause, and our profession generally has responded promptly to our calls, for which I am deeply grateful.

Denver, Col., was selected as the place for the next meeting and the third Tuesday of July, 1910, the time of holding same. This place and date were unanimously chosen and everyone seemed particularly pleased with the idea of visiting Denver at that time of the year. Arrangements should be made for railroad rates providing for stop-over privileges, and a sufficient length of time to permit those attending to spend several days in and around Denver following the meeting, as this arrangement will insure more interest being taken in the sessions of the Association, instead of devoting time, during the meeting, to side attractions.

The officers are already at work arranging plans to make this the most successful meeting the Association has ever had.

The southern dentists, and especially the local committee, did everything possible to make our stay in Birmingham both pleasant and profitable. The courtesies of the Birmingham Club were extended to the members, and a barbecue was given at the Country Club Wednesday afternoon, followed by a dance at the Club in the evening.

Quite a number took advantage of the opportunity, in going or returning, to visit the historic battlefields around Chattanooga, and I can personally vouch for a most enjoyable day being spent there, by a good sized party, on our return trip from the meeting.

THERE is satisfaction in the consciousness of work well done--well designed, well carried out and finished artistically. But we must not forget that this includes the proper appreciation of our work by patient and community and the receipt of full, fair pay for it.

MISCELLANY

DENTISTRY IN 1958—A GLIMPSE INTO THE FUTURE

By F. B. Spooner, D. D. S., Brooklyn, N. Y.

(Continued from page 317, April Summary)

In the orthodontia clinic, were children of nine and even seven years old. Corrections were started when the bone was soft. The majority of the children were very beautiful: years of Socialism raised the grade of physical perfection. I did not see the depraved sickly crowd found in the New York hospitals, making me think it irreverence to say, man was "made in the image of God." The *Millennium* had come. Mothers were clear eyed with no hollows in the cheeks, as in the age when the poor thought more of a dollar saved than a tooth preserved. A brave look was on all faces, for there were no craven hearts, thinking of the "potters' field" when this fitful life is ended. Thank God the time had come when ended was the struggle to gain little, where nature had provided so much.

Seeing the results, I thought sadly of when women allowed their children to grow "as the grass of the field;" of medical colleges, which instructed of the stomach, but nothing of the first organ of digestion named in Gray's anatomy: manufactured physicians to cure, who only knew how to diagnose the tongue, possibly shrugged their shoulders, telling patients to go "to a dentist" with as much contempt as to "visit a corn doctor."

In 1958 children were taught to avoid sugar, which is sweet in the mouth but ferments in the stomach. Children are cautioned as to chemical sweets, the difference between *natural*, and the product of a *factory*. Honey is recommended as the gift of God to the Israelites; the "milk and honey" of the promised land.

I related to the Director how I had started an educating crusade in the Long Island College, finding it a sad history with the Mothers too old to gain a new thought. Just before I passed away, a younger man, Dr. T. Hyatt, had better success, and more wisely worked on the children in the schools.

We now passed through a long passage in the form of an arch which gave communication from one building to another. On the walls, and between the windows, were medallion portraits of those in the past who had contributed to the cause of dentistry. I saw those that I knew—Abbott, Black, Bonwill and Meeker, with many others. Amongst them I spied my own face, (but it was small indeed), and I record the fact only as it enabled me to prove, when certain evil minded men doubted this truthful

history, that it was really as I stated, for the artist had represented my portrait with a wart under my left ear.

While we were examining these relics of famous men, the Director placed a Metaphone to his ear, explaining to me that we would go to the temple where a lecture on salivary calculi was in course.

I must explain that all human beings (and possibly animals) have a different combination pitch to their conductivity. In 1958 a man could place his finger on a safe, and the bolts be drawn, the mechanism being syneronized to his electric mentality. A man might be alarmed at five o'clock in the morning, by a clock, while his partner slumbered peacefully.

Lovers could communicate in spite of the most careful chaperone, and, in fact, scandals were known of ladies who lent their metaphonic key to lovers who could thus basely deceive confiding husbands. A novel catophonic device was invented, by which, if a man be disturbed, he could turn on the contrivance, making a most awful alarm, of which the *cats* only were the hearers. In fact, this marvelous invention, promising so much for the benefit of the race, became a means for sin, and immorality. As was seen in State boards, good to cheek careless Colleges was prostituted by selfish men to persecute their brothers, for it is manifest that if a dentist is good in one state he may surely be accepted in another unless the desire is to juggle with law for sectional reasons.

As invention makes way for more, the metaphone was controlled by a "dissipator" which a man could have in his pocket, and the action put the metaphone of his wife out of business. This was done by the man walking around her; the reverse at night would enable it to again be in operation. One celebrated divorce case alleged (amongst the grievances suffered by the lady), that this inhuman treatment interfered with her feelings and happiness.

It was this marvellous instrument which enabled the Director to learn from the office what was to happen in the lecture temple. I may say as a most important use, that the metaphone diagnosed *dead teeth*, always a matter of trouble and uncertainty. The mentality of the patient being taken, the connection was made, and the dentist at once discovered by the false sound when the diseased organ was touched.

I was interested in a tablet which commemorated the earthquake at Panama in 1912, where many dentists died. There was a slight movement of the under strata, due, possibly, to the explosives employed in the great Culebra cut. All of puny man's work was finished in three minutes, for in that time a water way was formed from ocean to ocean. I thought of what a commentary it was, on God—as alleged—revealing himself about the hereafter, when He gives us no confidence concerning *this* world.

The lecture room we now entered was impressive. A lofty roof was hardly visible in the dim light which filtered through windows of stained glass. Some elastic material deadened the sound of our steps as we walked down an aisle. Facing the spectators was a great screen of a rich texture,

for it glistened as the faint air stirred the folds. Rings of brass—or gold—held the curtain to columns of the same metal, surmounted by eagles like an immense Roman standard.

The section seen was salivary calculi. At first it was a confused mass, but as the saliva evaporated, the particle seemed a great jagged rock. A movement showed a strange beast crawling over the rocky surface, the form not unlike a seal, with feet and beak as a turtle. A short distance off was another, and as they approached a combat seemed imminent. Such was not, however, to take place, as a part broke away, leaving the amphibious organism staring over a precipice at his foe.

A view appeared showing immediate filling after devitalizing. The amplar beam was used to first inhibit the ganglion: a bur was employed to remove the pulp of a cuspid tooth. Then a thin wire was introduced after the current turned it to a dull red.

I whispered to the Director, "I have heard so much of the necessity to get all the contents from canal, down to the foramen."

"Why?" he answered. "Absolute asepsis is seen: cannot we rely that nature will take care of the remainder as she does when a leg is amputated."

Satisfied, I said no more, lest I show my ignorance, but listened to the remarks of the lecturer, preliminary to the final demonstration.

On the curtain was thrown a giant view of the ovum showing two polar cells, and the pronucleus in the centre. Outside were several tiny spermatozoon hovering on the verge of the great ball. Their heads having long tails were luminous. These were enlarged, the ovum disappeared, displaying the organisms as a luminosity only at the head; one was larger and more active than his fellows. Once more the ovum appeared, and the bolder speck of fire had reached through the wall and was converging to the pronucleus, which showed agitation. As they coalesced, the brilliancy of the spark was dazzling, then clouded, while the pronucleus emitted rays like an aurora.

Two tourists had entered a moment after us. The man wore a strap over his shoulder, and the woman, his companion, spoke in an audibly flippant manner.

"What is that bright little jigger, just gone out of sight?"

The Director leaned forward, and said sternly, "Madam, you have seen a *Soul born*."

We took the mono-rail back to Denver. I was so overwhelmed by what had passed, that I begged Dr. Handsome to have indulgence while I leaned back in the carriage. On opening my eyes, I saw in the distance ahead one of those wonderful flying ships. In spite of the speed with which it traveled, we soon covered the space, and then was plain the name, "Condor."

I recalled that this was the ship owned by Mrs. Avery who had been

so kind. I thought with regret how I had neglected her, and in the pressure of selfish interests given little thought to my benefactress. I determined to seek her out in Denver on my arrival. This I communicated to Dr. Handsome, asking him to accompany me.

Together we reached the landing stage. Mrs. Avery was most kind telling me that she had come to Denver on purpose to learn how I fared.

I was presenting my kind friend, Dr. Handsome, when a Government official pressed forward.

The better to understand this, I must relate the cause of the abrupt termination of our meeting.

In 1957, a Japanese Odontist, in experimenting to find a germ for pyorrhea, had allowed certain rats to escape which had carried the disease throughout the land. Its ravages were so rapid that the price of porcelain rose, and Japan demanded that the export duty be abolished by this country. So arrogant were they—since her second defeat of Russia—that an ultimatum was sent to this great nation.

A spy had reported a man of war on its way, armed with that terrible weapon millionite, one pound of which could lay San Francisco in ruins. The President, knowing the sudden methods of the enemy, instructed Gen. Roosevelt, stationed at Denver, to place a crew on board the Condor, and save the country. The General was compelled to ask the consent of Mrs. Avery, as the motors could not be started unless she supplied the mental key. Like a brave woman she agreed only if allowed to be of the company.

While this discussion was proceeding I perceived Agnes, and at a motion from me, she ascended to the vessel. We had time to say but a few words, when Mrs. Avery came to me, and in haste said, "Doctor, you will join us?"

I caught enthusiasm with her touch as she grasped my arm, and answered, "I will go and aid against this Yellow Peril."

Agnes made a movement of alarm, upon which Mrs. Avery, seeing the situation, haughtily exclaimed, "This woman must be landed at once."

But it was too late. The Condor was already in the air, pushing upward with powerful strokes of her propeller.

"No one leaves this vessel," spoke General Roosevelt sternly, "every moment is precious."

I recognized the resemblance to his Father; that great man and intrepid elephant hunter who was a friend to the Japanese in the past, and felt how fit it was that the son should now be selected in this *hour of need*.

(To be concluded)

EDITORIAL

TOOTHBRUSH CLUBS

SOME months ago the mistress of one of the London, England, county council schools, having found that 80 per cent. of the children under her charge were suffering from defective teeth, mostly owing to the fact that the toothbrush was an unknown quantity in their homes, instituted what she called a "toothbrush club."

She bought toothbrushes, which cost her about four cents each, and sold these to the children at three cents each, she paying the extra cent.

The children were shown how to use the brushes, then they took them home.

Each morning the teacher questions the children as to whether they have cleaned their teeth. If any have not, they fall into disfavor.

Every few weeks each child has to bring her toothbrush to school for examination by the teacher, and when any brushes are found unduly worn, they are replaced by new ones.

In a recent issue of the *British Dental Journal* the editor refers to this new movement as follows:

"One might make various guesses at the precise nature of a 'toothbrush club,' and some of them might vex a fastidious taste; so we may as well say at once that the club at Islington is in connection with an L.C.C. girls' school, and that each member has her own. The enterprise of the headmistress has formed the club and made it a success, in spite of gloomy prophecies that 'she would never be able to train the children to clean their teeth.' Miss Wright has succeeded beyond her wildest dreams. Among the children of the poor, in a state of society in which the dietary of townspeople is one sustained attack on the health of the teeth that deal with it, this is a matter of moment. The number of rejections among army recruits on the ground of bad teeth is large, and even so it has been found necessary in the course of the past few years to provide a staff of army dental surgeons. Miss Wright, it may be hoped, is the pioneer of a large movement in the elementary schools. It is, we think, in that inimitable book, 'The Golden Age,' that one small boy dates his experiences as having happened before and after the day on which he was promoted to a toothbrush. It is a turning-point that ought to occur in every infant life, especially in a nation which is more than a little inclined to boast about its habits of bodily cleanliness."

This school mistress has given an idea which seems well worthy of serious consideration. It embodies the practical application of the first principles of oral hygiene, and appears to be the most feasible way of getting children into the habit of cleaning their teeth.

The National Dental Association has just issued a pamphlet, for distribution among the masses, that instructs the people in the necessity of

caring for the teeth, and in various sections of the country the teachers and pupils in the public schools are being instructed in regard to the teeth and oral hygiene.

Now, if "toothbrush clubs" can be established among the school children, it will not only increase their interest in the teeth and their care, but will prove a power for good in the physical condition of our rising generations.

Let us encourage "toothbrush clubs."

AN AMERICAN MEMORIAL TO W. D. MILLER

STEPS are being taken toward securing an American memorial to the late Dr. W. D. Miller. At a meeting of the Columbus Dental Society, of Columbus, Ohio, held March 23d, 1909, the following resolutions were presented and adopted:

Whereas: The late Dr. Willoughby D. Miller, who devoted his life to untiring research for the benefit of dental science, was an American, and an Ohioan by birth, and

Whereas: It is desired to obtain an expression of opinion from the various dental societies and associations meeting during the interval pending the next meeting of the Ohio State Dental Society (Dec., 1909), therefore be it

Resolved: That the Columbus Dental Society, of Columbus, Ohio, suggest the advisability of raising a fund for a suitable memorial by the dental profession of America, to commemorate the life and work of the said Dr. Willoughby D. Miller; said memorial to take such form as may be determined by the consensus of opinion of the various dental organizations of this country. Be it further

Resolved: That the Ohio State Dental Society at its next annual meeting be requested to take charge of the Miller American Memorial matter, and of such correspondence as may be received pertaining to the same.

This movement seems a most laudable one and it is hoped that the various state and other dental societies will sanction it. All that is now asked is an expression of approval by the various dental societies, as no subscriptions will be solicited until after September 1, 1909, so as not to interfere with the International Memorial fund now being raised.

The above resolutions were presented at the recent meeting of the National Dental Association, in session in Birmingham, Ala., and received the approval of that organization, and they should be endorsed by all the dental societies in America.

MEN YOU KNOW THE "EASY MAN"

HERE he is, the man who is looking for a fortune on easy terms and without work.

He is ever listening for a sound like a dividend and ever ready to hear the tale of the how-to-get-rich-quick agent.

From four to ten per cent. interest and a safe investment does not appeal to him. He wants something *worth while*, and it is usually a while before he gets it.

Heshuns real estate, bonds, loans and first mortgage securities, but

as a child gleefully clutches a proffered dolly, so he grabs the glittering gold mine stock with immense dividends—on paper.

He separates himself from his hard earned cash to fill his treasure box with certificates of stock in gold mines; lead mines; silver mines; trust companies; oil companies; development companies, etc., etc.—and spends his spare time figuring his probable dividends when the enterprises become established on a paying basis.

He is rich according to his figures, but not according to his bank account. Yet he persists in his frenzied buying. He buys stock in everything that promises “dividends,” from the *sure thing* venture to the manufacturing of birdseed for cuckoo clocks.

He is a prey for scheming sharks and they find him. They keep him poor from buying, and poor from having bought.

Many a man could from experience, write a truthful treatise on “How to Get Poor Quick.”

It is like trying to beat *loaded dice* to attempt beating a trickster at his own game, and the man who bites on all the bait offered by promoters, will see the day he will regret.

It is true that some ventures are meritorious, but more often the really good things do not *go begging*.

Small things are not to be despised. A safe investment paying from four to ten per cent. interest will, nine times out of ten, net one more than the great majority of lauded investment schemes.

He is a wise man who knows when to quit, if he has already begun speculating.

The “Banished Duke” found “sermons in stones,” but the wary man can find a good enough sermon in one “gold brick.”

PROGRESS OF A PROGRESSIVE JOURNAL

The publishers of this journal have purchased the subscription list of *The Dentist's Magazine*, formerly published at Cleveland, Ohio, and merged it with that of *The Dental Summary*. Hereafter *The Dental Summary* will be supplied to *Dentist's Magazine* subscribers during the term for which they have paid.

The Dental Summary is forging rapidly ahead. The large editions of January, February and March are entirely exhausted, and hundreds of additional copies are required each month to meet the increasing demand. It is the ambition of the publishers and editor to make it the one dental journal that no progressive dentist can afford to be without.

Our readers can aid us in this worthy effort by sending the editor descriptions of methods and practical ideas they find beneficial in their own practice. We want everything helpful to give to our thousands of readers.

PRACTICAL SUGGESTIONS

COLOR PROBLEM IN INLAY WORK

By C. J. Lyons, Jackson, Mich.

In order to understand the color problems in porcelain, light, which is the source of color, must be taken into consideration, and the laws of reflection, refraction, diffusion and absorption thoroughly understood.

As light enters the porcelain, part of it is reflected, part refracted, part diffused and the remainder absorbed.

The angle of reflection and the amount of reflected light given off depends upon the contour and the surface gloss, while the angle of refraction and the amount of refracted light which enters the porcelain depends upon the density and texture of the porcelain. Here again we see the importance of fusion.

Unless we obtain exactly the same gloss on the surface of the porcelain as that of the natural tooth, the amount of reflected light will differ from that of the natural tooth.

Unless the contour of the crown or inlay is exactly the same as that of the natural tooth, then the angle of reflection will differ, and the appearance will be changed.

The amount of refracted light must necessarily vary on account of the density of the porcelain differing from the density of the natural tooth but the nearer the density of the natural tooth structure can be approached, the more nearly will the refraction be equalized.

The normal dentine under a high power glass resembles fine sand paper in appearance, and in building up the porcelain body that is to represent the dentine, the nearer we can approach that dull appearance, the nearer we can approach the appearance of the natural tooth when our work is completed. By not over-fusing the foundation body at any time in the process of constructing a crown or inlay, that dull appearance will be left, so that instead of all of the light being reflected a part of it will be diffused, and the conditions will more closely resemble the conditions of nature.

The remaining property of light to contend with is absorption, and this is one of the hardest to overcome.

Any foreign substance placed back of a translucent body will form a dark background, and light will be absorbed instead of diffused, unless that translucent body is thick enough so that the rays of light will be reflected, refracted and diffused before reaching that body.

The thicker and deeper the inlay, the less absorption of light will

take place. The cement should be as light as possible, as less absorption occurs when there is least pigment in the cement.

In building on the enamel colors I have been more successful in building them on by sections rather than in layers, because the hues in the underlying layers will affect the color in the over-lying layers. For instance, if we attempt to build a yellow over a blue, we do not get a darker yellow or lighter blue, but a green is produced.

To be successful in building up in layers it is necessary to understand thoroughly all color combinations, that is, what effect each color and thickness of that color will have over those layers underlying, and to know just what hue and amount of that hue is necessary to produce the desired results in matching the natural tooth.

In building up in sections I use the foundation body to represent the dentine, usually using a yellow, then build in the gingival third with the color desired, then the middle third, then the incisal third, not having these colors overlap, and only fired to a hard biscuit, finishing the whole by a uniform layer of neutral color to obtain the surface gloss.

In matching a tooth for crown or inlay, experience, judgment and deliberation should be exercised; then when the different hues have been decided upon to bring about the proper tone of the color of the natural tooth, care in fusing should be exercised, so that those hues will be developed successfully.

The esthetic value is the chief factor in the use and application of porcelain, and if we have overcome all of the other causes of failure and in the end have not obtained the required color, then is the whole operation a failure.—*Dental Register*.

THE DITTMAR CAST GOLD-SHELL GROWN

By R. B. Tuller, Chicago.

A band of 34 ga. 24-k. gold is made and accurately fitted to the prepared root in the usual way. Thirty-four gauge pure gold is used because it is thin enough and soft enough to be most accurately modeled to the form of the root and this is extremely important. If the stump has been trimmed up to a slight taper, as it should be, the 34 gauge gold will stretch a little and thus hug the root beneath the gum margins as close as can be.

This band is now slitted down the sides in numerous places equal in depth, so that when the divisions are turned in to the center, lapping one over the other at that point, the top is closed. Or if preferred, the band may be capped by soldering on a flat piece at the right height to allow for the addition of occlusal thickness and cusps. With this now accurately adjusted to the stump, add on to the top enough modeling compound to get a good bite, together with contact of approximating teeth. The crown should come away with the modeling wax, then fitted exactly in place. If not, it must be removed from the stump and carefully adjusted in the compound.

Now, this shell should be filled up with the silicate casting invest-

ment and the rest with plaster as usual in making up articulating models. Having secured articulating models, soften and remove the modeling compound and then, with a small brush, oil the plaster margin in around the crown, also the sides of approximating teeth.

The next step, after gold is entirely clean, is to build up a top and lateral contour with Taggart or other suitable inlay wax. This is readily done by having the wax melted in a little dish and applying it with a fine camel's hair brush to the thickness desired on all sides and on top of the gold. Then by closing the articulator with the wax warmed the impress or bite is made of the occluding teeth, and the necessary carving and occlusal shaping up may be done; also the contouring on all sides, painting on more wax or trimming away and smoothing and polishing up until a perfect tooth model is formed over the gold shell. None of the wax should impinge on the plaster. The oil is applied to prevent the wax that may accidentally touch the plaster from sticking.

Now the adjoining teeth may be broken away, leaving the crown model standing alone. The approximal surfaces should now be painted with a thin layer of wax to insure correct contact after finishing the gold. If this is not done the crown might be a little too narrow approximally. It is better to have too much than too little.

Now the smoother our model is finished up and polished the better the cast will be. The model can now be sawed off from the plaster and is ready for investment after inserting the sprue at the most available point. Of course the shell remains in the mold and the molten gold takes the place of the disappearing wax.

When this crown is finished, it is about as perfect as can be made, having a very thin edge to pass between the gum margin with gradually thickening walls to and including the occlusal portion. Twenty-two carat gold should be used for the casting, as it is harder and more durable.

A crown made in this way contains a good deal more gold than a shell crown made of plate in the old way, it is worth more intrinsically, artistically and every other way, and a good price should be charged for it.

For bridge supports they are far superior in strength to the old style shell crowns that being thin-plate yield more or less under stress. Any cast crowns are superior in this respect. There is no springing and yielding in the heavy work that may be put upon them. Such a weakness in the usual shell crown has been the cause of many a failure in bridge work; and beside that, the lack of close adaptation to the shape of the root, which can be secured in this way.—*American Dental Journal*.

FOR SENSITIVE DENTINE

By W. E. Tennant, Fond Du Lac, Wisconsin.

For sensitive cavities try a saturated solution of potassium carbonate in glycerine, or a saturated solution of zinc chloride in alcohol; both working very well.—*Dental Review*.

TEMPORARY TEETH

By S. G. Walton, Cincinnati, O.

When we find cavities in the children's teeth, the question with us is, how shall they be treated, and what material used in filling them so that they will give the best service, performing their function properly? One says, never under any circumstances should a deciduous tooth be devitalized. Another says, devitalize and remove contents from pulp chamber and fill that portion with good antiseptic paste (he uses a mixture of zinc oxid, iodoform and oil of cloves). Abscessed deciduous teeth require most attention, and where it is advisable to fill the roots, they should be sterilized preferably with equal parts of trikresol and formalin, and filled with a material which is absorbed with the roots, for any other material offers a source of irritation for recurrence of the pathological condition.

We find it is almost impossible to dry the root canals thoroughly, so it becomes necessary to use a material that will adhere to moist surfaces. Dr. Henry Ferris, of Brooklyn, suggests a filling material which he finds meets the requirements for a good root canal filling material in temporary teeth. The formula he uses is: Isinglass, dr. i; tannic acid, gr. i ss.; trikresol, m. iv; aqua distilled, dr. i, gr. xxx. The mixture is heated to 100 degrees in a water bath. It becomes syrupy, and can be introduced into roots and covered with cement or gutta percha.—*Items of Interest.*

REPAIRING A HOLE IN A CROWN

It is often necessary to repair a large hole in the occlusal surface of a molar crown. This may be accomplished successfully in the manner described below. Remove the crown and scale off any cement that has adhered to the root, and drill out the cement in the crown. Replace the crown in position on the root and press wax into the opening in the crown, being careful to leave enough extending occlusally to take an imprint of the opposing cusps. Take a bite in this wax and remove crown with wax intact. Flow plaster into the crown and when it is set remove the wax. If the hole does not include too much of the occlusal service the operator may retain in his mind the approximate form by studying the impression in the wax before removing it. If the hole includes a large portion of the occlusal surface the cast inlay method may be adopted. In the first instance make a matrix of the cavity and flow gold into it, building it up to the occlusal form as accurate as you can. In the second instance cast a gold inlay, place it in the cavity and attach to margins with solder. This will provide bulk of metal to insure the crown from failure due to the first cause of the hole. The occlusal surfaces of gold crowns are usually made too thin.—G. W. J., *Dental Review.*

HINTS ON THE USE OF GASOLINE IN THE DENTAL OFFICE

By Dr. Taylor, Boonville, Ind.

GASOLINE. —For making a solution of rubber. For cleaning wax from the teeth before flasking. For cleaning cement from instruments, hands, and slab.—*Dental Cosmos.*

POST-EXTRACTION TREATMENT

By J. P. Buckley, Chicago

R—Orthoform

Europhen..... aa 51

Liquidi petrolati.....q. s. to make a paste. M.

Sig.—As directed.

You will get much benefit from this, especially country dentists, who have to do a great deal of extracting, in allaying the pain after the extraction; if you have separated the process, or if the process is attached to the cementum of the root; or if you have had to go down and expose the process more or less; in any of those conditions from which you have severe pain you can stop that pain almost like magic by its use. Now, it is claimed by some that orthoform is a disinfectant. It is not a good disinfectant, but is an excellent local anesthetic. You can prolong the anesthetic effect if you use europhen. Europhen is a substitute for iodoform. It is an insoluble product, which, when it comes in contact with water, gradually gives off iodine. Combining these two and adding to that liquid vaselin makes an oily paste. After drying the exposed part, apply oleaginous paste, and you can control the pain. You do not need to be afraid; if the patient lives in the country and cannot come in handily, and you think the pain will not stop by the time the anesthetic effect has passed away, you can give some of the paste and let it be applied personally. It must be applied to an abraded surface.—*American Dental Journal*.

USE OF COMPRESSED AIR

Compressed air is more useful in a dental office than many dentists suppose—chip blower, spray bottles for spraying the mouth, forcibly dislodging particles of food from between the teeth, driving saliva and moisture from cavities for filling, drying cavities and root canals, either with cool or hot air; obtunding sensitive dentine, cooling wax models for inlays, cooling impressions, dislodging moisture from impressions, spraying separating media upon impressions. There is no pressure of air for soldering equal in value. The pressure is constant, which often makes the difference between success and failure in many pieces of fine work. The mouth blowpipe and the bellows are irregular in pressure, which makes it almost impossible to keep the flame pointed in the proper place. Wherever there is water pressure or electricity compressed air may be installed at a cost ranging from six dollars to fifty, according to the convenience of installation and the desires of the dentist.—*Dominion Dental Journal*.

TO HASTEN THE SOLUTION OF GUTTAPERCHA IN CHLOROFORM

Chloro-percha gets out of service now and then when it is much needed because of loss of chloroform through evaporation. To get it into shape again for immediate use, add the solvent and immerse the container in a dish of hot water. The chloroform begins to boil forthwith and the material is ready for immediate application.—*British Dental Journal*.

SOCIETY ANNOUNCEMENTS

INDIANA STATE DENTAL ASSOCIATION

The fifty-first annual meeting of the Indiana State Dental Association to be held at Indianapolis June 29, 30 and July 1, will be a profitable meeting to those attending and a meeting that will be noted for its many practical suggestions.

C. D. Lucas, chairman of the executive committee, has completed arrangements for six excellent papers. Four of these from our own state and two from special guests outside the state. W. S. Kennedy, supervisor of clinics, promises the largest, the best and the most practical clinic in our history. No dentist in Indiana who cares for his mental improvement can afford to miss this meeting. Mark off the dates. Do it now!

—Otto U. King, Secretary.

NORTHERN OHIO DENTAL ASSOCIATION

The fifty-second annual meeting of the Northern Ohio Dental Association will be held in the Central Y. M. C. A. Bldg., Cleveland, O., June 1, 2 and 3, 1909. The program arranged offers a few timely papers, a large number of helpful clinics and a generous display of instructive exhibits. The place of meeting is convenient. Cleveland provides diversity of entertainment for the visitors. On the whole everything is in keeping to provide a profitable three days for the men in attendance.—F. M. Casto, G. F. Woodbury, J. H. Wible, Executive Committee.

SOUTH DAKOTA STATE BOARD OF DENTAL EXAMINERS

The next meeting of the South Dakota State Board of Dental Examiners will be held at Sioux Falls, S. Dak., July 13, 1909, beginning at 1:30 p. m. and continuing for three days. Both practical and written examinations will be required of all candidates, and all applications, together with the examination fee of \$25.00, must positively be in the hands of the secretary not later than July 5th, otherwise candidates will not be admitted to examination.—G. W. Collins, Sec'y, Vermillion, S. Dak.

OHIO STATE DENTAL BOARD

The regular spring meeting of the State Dental Board of Ohio will be held in the city of Columbus, on June 15 to 18. All persons wishing to begin practice in this state must make application for examination. Examination fee \$25.00. All applications, with the fee, must be in the hands of the secretary not later than June 5th. For blank applications and further information, address F. R. Chapman, Secretary, 305 Schultz Bldg., Columbus, Ohio.

INDIANA STATE BOARD OF DENTAL EXAMINERS

The next regular meeting of the Indiana State Board of Dental Examiners will be held in the State House in Indianapolis, beginning Monday, June 7, 1909, and continuing four days. All applicants for registration in this state will be examined at this time. This will be the last meeting of the year 1909. For further information and instruction, address the Secretary, F. R. Henshaw, Middletown, Indiana.

VIRGINIA STATE DENTAL ASSOCIATION

The fortieth annual session of the Virginia State Dental Association will be held at the Mechlenburg, Chase City, Va., July 21, 22 and 23, 1909. Every effort is being made to make this the most interesting and successful meeting of our Society. Men of national reputation will give clinics and read papers. All ethical practitioners are cordially invited to attend.—W. H. Pearson, Cor. Secretary.

IOWA BOARD OF DENTAL EXAMINERS

The next meeting of the Iowa State Board of Dental Examiners for examination will be held at Iowa City, beginning June 7th, 1909, at 9 a. m. Practical examination will be held in both Operative and Prosthetic Dentistry. Applications must be in the hands of the secretary by June 1st. For further information address E. D. Brower, Secretary, Le Mars, Iowa.

KENTUCKY STATE DENTAL ASSOCIATION

The thirty-ninth annual convention of the Kentucky State Dental Association will convene at Crab Orchard Springs, Ky., May 17, 18 and 19, 1909. We anticipate a most interesting and profitable meeting at this most popular central Kentucky resort. A cordial invitation is extended to all ethical members of the profession.—W. M. Randall, Secretary.

MICHIGAN STATE DENTAL SOCIETY

The fifty-third annual convention of the Michigan State Dental Society will be held at Kalamazoo, on June 29 and 30, and July 1, 1909. An attractive and instructive program is in course of preparation, and a most profitable meeting is assured.—James W. Lyons, President; Don M. Graham, Sec'y.

LAKE ERIE DENTAL SOCIETY

The next annual meeting of this Society will be held in Cambridge Springs, Pa., on May 18, 19, 20, 1909. An exceptionally good program is in preparation and a good attendance is expected. Ethical dentists are invited to attend.—V. H. McAlpin, Sec'y., Warren, Pa.

RESOLUTIONS ON THE DEATH OF DR. HENRY L. UPHAM

At a recent meeting of the Harvard Odontological Society, Boston, Mass., the following preamble and resolutions were adopted:

Henry Lauriston Upham was born in Phillipston, Mass., February 25, 1848, and died in Boston, Mass., February 26, 1909.

He was the son of Joseph E. and Susan P. (Newton) Upham.

His early education was obtained in his native town, graduating from the Templeton (Mass.) High School later, after which, for a short period, he attended the New Ipswich Academy, at Ipswich, Mass., and later the Woodstock Academy at Woodstock, Vermont.

During a business career in Tiffin, Ohio, he was a member of the Tiffin Water Board. Later he concluded to enter the Harvard Medical School in 1883, partially with a view of becoming a physician, in order to study his own condition and benefit thereby. After passing all the examinations, at the close of the first year, owing to financial reverses, he concluded to change to the Dental School, graduating in the class of 1886, of which he was secretary.

For eleven years (1891-1902) he was Instructor in Operative Dentistry, Harvard University. He was an active member of the Harvard Odontological Society from 1887

to his death. The Anniversary Orator in 1891, and its Editor from 1889 to 1899. A member of the Harvard Dental Alumni Association from June, 1886, to his death. Secretary for three years, 1892-1895.

Was a member of the Massachusetts Dental Society, 1894-1901, being Councillor 1895-1899, and Editor 1898-1899.

Dr. Upham was an honored member of the profession, an able practitioner, writer, thinker and teacher, universally loved and respected by his clientele and confreres for his high ethical standing and his scholarly attainments.

Few men in our profession are so greatly loved and respected by those who were so fortunate to intimately know him, and no one in the community in which he lived will be more greatly missed or more sincerely mourned. His was a great nature, and his sympathetic hand and heart were felt where sympathy was needed.

Resolved: That in his decease we have suffered the loss of a member, who had an active interest in this Society, and the welfare of the profession at heart.

Resolved: That we, the members of the Harvard Odontological Society, express to the members of his bereaved family our sympathy and sorrow in their affliction and assure them of our admiration for his high personal and professional qualities.

Resolved: That these resolutions be spread upon the records of this Society, a copy be sent to the family of our departed member, and copies be sent to the dental journals for publication.

Waldo E. Boardman, Julius G. W. Werner, Lyman F. Bigelow, Committee.

Seattle Auxiliary announces the annual Supreme Chapter meeting of Delta Sigma Delta Fraternity on July 21, 22, 23, 1909, in Seattle. July 24th will be Delta Sigma Delta day at the Alaska-Yukon-Pacific Exposition.—C. F. Fiset, Historian.

SUNSHINE

Did you ever crave for sunlight
During dark and gloomy days—
Or, in some sleepless midnight
Wonder if the old world pays?

There's not a man that's living
Whom this haunted thought possessed,
But could throw off such misgiving
If this secret he'd but guessed.

Now, sunshine is not wholly
That force by science named;
Those beams of light are solely
One kind the world has claimed.

Behold, a psychic force called Love;
If allowed its fullest sway,
Just like the light waves from above
Will drive dark hours away.

Aladdin's lamp ne'er played a part
Bestowing lavish treasure,
As does an open loving heart
Which gives to all full measure!

AFTERMATH

Robberies

Feb. 28.—F. W. Herr, Waterbury, Conn., about \$100 worth of gold plate, solder, crown and bridgework.

Feb. 28.—W. B. Brewster, Waterbury, Conn., gold worth \$5.00.

March 20.—Louis R. Richardson, Enid, Okla., \$55 in cash and several hundred dollars in checks on outside banks.

March 13.—Wichita, Kan.—Eight dental offices have been robbed in this city, three were robbed in Hutchinson and several in McPherson were entered and gold taken. All of the robberies have occurred within the past month. Dentists in this city have rented safe deposit boxes in which they keep their gold. They are afraid to trust it in their office safes.

March 9.—S. E. Huffhines, Webb City, Mo., gold worth \$30.

March 9.—J. R. Kuhn, Webb City, Mo., gold worth \$100.

March 15.—Parkington & Slight, Albany, N. Y., dealers in dental supplies, gold fillings and dental supplies valued at \$10,000.

April 4.—Fitzgerald Dental Supply Co., Columbus, O., about \$5,000 worth of gold and \$200 in cash.

March 4.—Gold, platinum and porcelain crowns, valued at about \$400, constituted the haul that robbers made from a raid on five of the dentists' offices in Oklahoma City. The offices robbed were those of Dr. W. L. Dutcher, about \$175; Dr. S. S. Swihart, about \$50; Dr. F. H. Colter, about \$125; Dr. A. J. Beatty, loss about \$5; Dr. A. M. Detrick, loss about \$40.

April 5.—Dr. F. M. Carr, Elgin, Ill., \$50 worth of gold.

Feb. 26.—Waxahachie, Texas.—Several dental offices were robbed. All the gold that could be found in two offices was taken, besides a quantity of crowns and pins.

Deaths

March 5.—Frederick Schloendorn, Baltimore, Md.

March 7.—Earl P. Lane, Jersey City, N. J.

March 7.—Americus V. Bardeen, Hamilton, N. Y., aged 81 years.

March 9.—John H. Downes, Brooklyn, N. Y., aged 69 years.

March 10.—J. M. Nash, Brenham, Texas, aged 56 years.

March 10.—Wm. P. Tucker, Los Angeles, Cal., aged 71 years.

March 21.—Preston E. Day, Providence, R. I., aged 62 years.

March 21.—W. G. Teel, St. Louis, Mo.

March 28.—Harry W. Crane, New Orleans, La., aged 48 years.

March 30.—Edwin G. Lee, Norfolk, Va.

March 30.—Henry Turrill, Rutland, Vt.

April 1.—Francis G. McCollum, Cambridge, Mass., drowned, aged 41 years.

Marriages

Dr. G. D. Morgan, Johnstown, Pa., and Miss Jessie P. McCafferty, East Brady, Pa., March 16.

Dr. R. A. Johnson, Bainbridge, N. Y., and Miss Mary Pocock, Bergin, N. Y., March 24.

Dr. H. C. Matlack Appointed

Governor Harmon of Ohio, on April 6th, appointed Dr. H. C. Matlack of Cincinnati, Ohio, a member of the Ohio State Dental Board to succeed Dr. H. C. Brown, whose term has expired.

National Dental Association The thirteenth annual meeting of the National Dental Association, held at Birmingham, Ala., March 30 to April 2, was a most successful one with a good attendance.

The papers and discussions were exceedingly interesting and held the close attention of large audiences throughout. Official action was taken providing for a National Dental Journal, commencing October, 1910.

The committee on revision of Constitution and By-Laws presented a number of amendments embodying a liberal plan of reorganization. Copies carrying the proposed changes are to be printed and mailed to the membership at an early date, which will give ample opportunity to thoroughly understand same before final action is taken.

The following officers were elected: President, Burton Lee Thorpe, St. Louis, Mo.; vice president for the west, W. T. Chambers, Denver, Col.; vice president for the east, Charles W. Rodgers, Boston, Mass.; vice president for the south, Thomas P. Hinman, Atlanta, Ga.; corresponding secretary, H. C. Brown, Columbus, O.; recording secretary, Charles S. Butler, Buffalo, N. Y.; treasurer, A. R. Melendy, Knoxville, Tenn. Executive committee, (new members for three years): C. M. Work, Ottumwa, Iowa; V. H. Jackson, New York City; W. G. Mason, Tampa, Fla. Executive council: H. J. Burkhart, Batavia, N. Y.; B. Holly Smith, Baltimore, Md.; A. H. Peck, Chicago, Ill.; W. E. Boardman, Boston, Mass.; C. L. Alexander, Charlotte, N. C.

Denver, Col., and the third Tuesday of July, 1910, were chosen as the place and date of the next meeting.—H. C. BROWN, Cor. Sec'y.

New Dental Legislation in California Senator Hurd's dentistry bill has passed both branches of the Legislature of California, despite the lobbying of the State Board of Dental Examiners. The latter are opposed to the measure, as it makes it possible for a dentist who had ten years' experience to take a practical examination, and if he demonstrates his ability to fill a tooth he is entitled to a license.

Members of the State Dental Board are confident the Governor will not sign the measure. They claim that Hurd introduced the bill in order to help out friends in the Southland who had been unable to take the difficult examination fixed under the present dental laws.

In comment on this bill, the *Sacramento, Cal., Bee* says: "Is dentistry a trade or a profession? Senator Hurd maintains that a dentist need be no more learned than a plumber or a blacksmith. His views are so set on the subject that he has put through the Legislature a bill to relieve all persons who aspire to pull and fill teeth from the inconvenience of taking lessons in a school. Four years in a dentist's shop is enough to get a degree under this bill.

"The State Board of Dental Examiners and all the dentists who have stood the educational test disagree with Hurd. The 'regulars' lost but now they are forward with a bill of their own that requires the aspirant to practice dentistry to answer questions to show how much he knows about such subjects as anatomy, physiology, chemistry, materia medica, therapeutics, metallurgy, histology, pathology, prosthetic dentistry and orthodontia.

"Today there is a whole galaxy of dentists in town who are going to stay and fight for their bill until the Legislature adjourns."

German Co-Education Prussia has just entered upon an experiment in co-education in the universities, the first matriculation of female students at Berlin, Goettingen, Bonn and the other great educational establishments having recently taken place. Six hundred and sixty-three students were admitted, 461 of these being from Prussia and 202 from other states. The choice of courses made by these young women is interesting as an index to the trend of feminine thought and activity. Of the total number, 363 take up philosophy, philology or history; 134 medicine; 108 mathematics or natural sciences; 25 dentistry; 22 political economy; 6 law; 3 evangelical theology, and 2 pharmacy.

California's Chinese Woman Dentist A young Chinese woman, Dr. Faith Sai So Leong, said by the Chinese consul-general to be the only woman of her nation (which comprises some 400,000,000 inhabitants) who has ever studied dentistry. Dr. Leong was adopted, 10 years ago, when she was 13 years old, by Mrs. E. J. Nickerson of San Francisco. Mrs. Nickerson had been a teacher of English in the Chinese quarters of her city, had seen and loved the little girl, and legally taken her to herself. As Dr. Leong grew older, she showed great mechanical ability, spent many hours with a cousin who was a dentist in San Francisco, and became anxious to become a dentist herself. Her adopted mother gave her every opportunity. Her English might be queer, but her courage was perfect; she was a general favorite, and when she graduated, she stood among the foremost in a class of 40, and was cheered by her fellows when she received her degree. She began practice in San Francisco, but at the time of the great fire her office and laboratory was destroyed. When the new oriental district was formed across the bay, she set up her office in Oakland, where she has a good practice.

Incidents from Practice Dr. J. A. Reese, Norton, Va., sends us the following amusing experiences: I am a young dentist and had not been married long when one day I extracted a tooth of a big fat, slick, greasy looking negro woman. In applying dentalone to the socket for after pain, I accidentally caught her lip with the foil pliers used in carrying the cotton. She gave an awful grunt and I asked her what was the cause of it. She replied, "You are biting my lip!" Of course, my young wife heard of it and I had to explain.

One morning while studying the good things in my *Dental Summary*, a middle-aged man, evidently a mountaineer, stalked in holding his jaw. "Say, Mister, what do you charge for pulling a tooth?" "Fifty cents, sir; got one that is giving you trouble? Sit down here and I'll have it out for you in forty seconds." "Well, I got one with the marrow showin' and I'll come around 'fo long and we'll trade a little!"

Foreign Dentists The severity of the dental laws on foreigners practicing dentistry in France has been pointed out more than once. The principal grievance is that before being allowed to practice here a foreign dentist must produce or obtain a general French scholastic diploma, apart from the proof of his technical qualifications. In a recent case a special ministerial decree was obtained to waive this requirement. It is suggested that if American dentists resisted the scholastic requirement and submitted a test-case to the Conseil d'Etat, the decrees published by the Ministry of Public Instruction would have to be annulled as being contrary to the law.

Dr. B. L. Thorpe Banquetted The St. Louis Society of Dental Science gave a banquet April 6th, at Hotel Jefferson, in honor of Dr. B. L. Thorpe's election as president of the National Dental Association, which occurred at Birmingham, Ala. The banquet began about 6 o'clock and was presided over by Dr. E. E. Haverstick. Speeches were made by every one of the twenty-three persons present.

Dr. R. O. Tripp. "Forty=Niner" Dead In the rear of the little store that he had hurriedly built of rough redwood slabs 60 years ago to serve the gold hunters, Dr. R. O. Tripp, of California, a forty-niner, passed away at the age of 92. Besides the distinction of having been a pioneer of this state Dr. Tripp was one of the first dentists to practice in San Francisco, having hung out his shingle in a ramshackle house at the corner of Vallejo and Stockton streets in the early days.

Dental Organization in South Africa At Bloemfontein, South Africa, January 6, the Orange River Colony Dental Society was founded. The first president is Dr. E. E. Hayes, of Bloemfontein, and the secretary and treasurer, Dr. H. R. Rowe of Bloemfontein, Orange River Colony, South Africa.

Organization of American Universities A Faculty Association of American universities has been organized with a membership of the University of Iowa, University of California, Harvard, University of Pennsylvania, University of Michigan and the University of Minnesota. The constitution is being adopted and the first meeting will be held next summer, probably in the east.

The object of the new organization is to promote dental education and science. It will be strictly on a pedagogical basis.

School Children's Teeth Inspected at Cincinnati, O. Under the direction of Dr. Miriam Schaar, of the Bureau of School Hygiene, a new course in the curriculum of sanitary instruction will be inaugurated in the Cincinnati public schools. The course will open when 20 dentists will inspect the teeth of about 1,200 children at the Sixth District School. It will be the first inspection of the kind made in this city on a wholesale scale, and is to be followed by a series of similar inspections in other schools.

Ames=Alterburg Dental Supply Company H. Q. Alterburg, who was connected with the Ransom & Randolph Dental Company, in Toledo, O., for a number of years, and who some time ago moved to Kansas City, has purchased with W. V. B. Ames, of the Kaw city, the business of the John T. Nolde Dental Manufacturing Company of Kansas City, and have organized a company to be known as the Ames-Alterburg Dental Supply Company with Mr. Alterburg as manager.

Dentists for the Navy Thirty dental surgeons to be appointed by the President for the Navy and Marine Corps are provided for in a bill recently introduced by Senator Dick, of Ohio. Under the terms of the bill they are to have the rank and pay of acting assistant surgeons, and after three years' service, if found competent, are to be eligible for appointments as dental surgeons with the rank of assistant surgeons.

Odontological Society, of West-ern Pennsylvania, Elected : President, Dr. J. D. Whiteman, Mercer, Pa.; vice president, Dr. W. H. Fundenberg, Pittsburg; secretary, Dr. B. M. Loar, Mt. Pleasant, Pa., and treasurer, Dr. C. C. Taggart, Pittsburg.

Newsy Notes Mrs. J. E. Bedient, aged 61 years, of Albuquerque, N. M., died March 2, while under the influence of chloroform given while she was having teeth extracted.

Failure of a safety valve in a steam vulcanizer to work was the cause of considerable damage in Dr. Rogers' dental office in Newburyport, Mass., March 16. After lighting the machine, the doctor went into another room to await the heating, and suddenly there was a terrific explosion. No one was injured.

A woman surely has the right to resent any impediment to the freedom with which she may exercise her tongue, and any restriction of this right entitles her to damages. So thinks a Chicago woman, who suffered a cut on her tongue in a dental operation and is asking \$1,000 for the injury. An impediment to her speech followed the operation.

Fire in the office of Dr. J. E. Condren, Erie, Pa., April 5, did about \$500 damage.

Charles J. Ketcham died of heart failure in the operating chair in a dentist's office in Bridgeport, March 31. Mr. Ketcham had arranged to have several teeth extracted and chloroform was administered. The dentist called for Mr. Ketcham's family physician, who came to the office and began to apply the anaesthetic. Ketcham had taken but a few breaths of the drug, and was not yet under its influence, when he turned pale and his heart action ceased. All efforts to restore life failed. Mr. Ketcham was 51 years old.

Edward Bliven, aged 10 years, of San Francisco, Cal., died March 6, while in a dentist's chair, under the influence of chloroform given to deaden the pain of extracting an abscessed tooth.

A dentist in Pennsylvania was fined \$100 March 25, for practicing dentistry without a license from the State Examining Board.

Fire destroyed the dental office of Dr. P. W. McGee, in Baltimore, Md., March 15.

Dr. Schwartz, a dentist, of Cleveland, Tenn., was severely burned about the arms and neck by the explosion of a gasoline tank in his office, March 5.

Russell A. Babcock has filed a suit in the Municipal court for \$1,000 against a dentist of Syracuse, N. Y., alleging injuries in the extraction of teeth on Feb. 20. In the complaint, it is alleged that while unconscious the defendant and servants of the defendant, fractured one of Babcock's ribs, or his sternum, puncturing one of his lungs, and causing his neck, face, arms and chest to become swollen.

Under the auspices of the Rhode Island Dental Hygiene Council and the State Board of Health, a conference on oral and dental hygiene, accompanied by an interesting exhibit, was held in the Public Library of Providence on March 31 and April 1, 2 and 3. Speakers well known in the movement delivered addresses at the sessions.

A broken engagement with a dentist for repair work is no cause for damages, according to a verdict given by a jury. A dentist of Canton, O., claimed to have set aside a time for repairing the teeth of one of his patients. She failed to keep the appointment and the dentist sued on the ground that he was entitled to his pay.

A Montgomery county (Pa.) jury, serving in a civil court, will, unless an outside settlement be effected, be called upon to determine the value of an "original" set of teeth. Alleging careless and unsatisfactory work a Norristown woman sued a prominent dentist of that place for \$6,000—nearly \$200 a tooth.

Awerkien (in *Zeitschrift fuer Anorganische Chemie*) states that his experiments showed finely divided metallic gold to be soluble in the presence of organic substances. Solution is slow at ordinary temperatures but more rapid at the boiling point. The solution of the gold in hydrochloric acid is especially promoted by methyl-alcohol, amyl-alcohol, ethyl-alcohol, chloroform, phenol, cane-sugar, glycerin and formaldehyde. From this should result a series of new gold combinations.

Ira A. Marshall, Ironton, Mo., says: Thousands of doctors are using picric acid for burns, and it is very good. To completely remove the stain from hands or any part of the body take one quart of warm water, put into it one dram of lithium carbonate and use as a wash. This will remove the stains easily and quickly, no trace being left.

Dr. E. C. Chapman of Damariscotta, Me., who will be 87 years old May 21, thinks he is the oldest Democrat in Lincoln county and the oldest practicing dentist in the world. He was born in Nobleboro, May 21, 1822, and has practiced dentistry in Damariscotta since 1846, a period of 63 years.

Concerning the practice of dentistry in the Dutch East Indies, Consul B. S. Rairden writes from Batavia that no diploma from any foreign (non-Dutch) dental college is recognized. Persons wishing to practice dentistry should first pass the required examination in Holland and obtain a Dutch diploma.

That dentists were important factors in society in the days of ancient Rome, and that they used gold for filling teeth, as dentists do now, was shown recently by Prof. Christian Hulsen, secretary of the German Archaeological Institute, at Rome, in the initial lecture of his course on Rome, in Baltimore, Md. Among other things he said:

"I was much astonished in my excavations to notice a conspicuous absence of golden ornament. I found many made of silver, but none of the more precious metal. Later on I discovered the reason for this in coming across a law which provided that gold should not be used for ornamental purposes with the exception of its use for filling teeth by the Roman dentists. Thus we see that there is nothing new under the sun, and that Roman dentists were much the same as those at the present day.

OUR OPINIONS AND OTHER THINGS

Here's where the publication end of The Dental Summary organization has its say: here are recorded opinions and conclusions that cannot be changed, colored or eliminated by business considerations of any kind, mingled, and more or less pleasantly interspersed, with funnigrams and think irritants. Neither the editor nor any of his valued coadjutants is responsible for statements herein; and the names of the writers will, upon application, be made known to those who have the right to know.

Of the work remaining to be done at Panama, the principal items are the completion of the cut through the divide and the erection of the locks. These will consume about the same length of time and may be depended upon to be finished in less than six years from the present. The latter task calls for an aggregate construction exceeding 5,000,000 cubic yards of concrete. This will be laid at rate of 5,000 cubic yards a day, involving a daily consumption of 8,000 tons of material. The Culebra Cut must be brought down to elevation 40, which will place the bottom of the canal 45 feet below the summit level. In order to fill this requirement, 8,000,000 cubic yards, of which about 5,000,000 are in earth and the remainder in rock, must be removed. At the present rate of excavation this represents fifty-five months' work. Considering all the conditions and allowing for slides and other impediments, the engineers are confident of reaching the required level before the end of 1914.

In respect to physical magnitude, the transportation of spoil is the greatest feature of the work. Every shovelful of material taken out of the prism has to be carried on an average ten miles and deposited in an out of the way place. In this task 300 miles of construction track and thousands of flat cars are employed. From 700 to 800 dirt trains, each composed of twenty-three cars, are kept constantly moving during the hours of daylight. The amount of spoil transposed during the past twelve months aggregated the enormous total of 280,000,000 tons.—From "The Situation at Panama," by Forbes Lindsay, in the *American Review of Reviews*.

Ex-President Roosevelt, as an editor, has already made it evident to every reader that he does not regard his new position as a sinecure. From whatever point of view we may regard his trenchant articles against Socialism in its many phases, there can be no doubt of his strenuous earnestness in his new departure as a defender of the established order. The weekly and monthly editions of Lyman Abbott's speaking trumpet, *The Outlook*, bear abundant evidence that Oslerism has no leg to stand upon in the able organization responsible for one of the best magazines in the entire field.

No magazine reader with cultivated taste can so much as read the list of titles and authors in the new *Appleton's* without feeling the birth within him of a strong desire to add it to his list of monthly visitors. The April number is a veritable feast of good things, among the more important contributions appearing— "Through the Wall," the opening chapters of a serial by Cleveland Moffett; "The Prince's Own," by Catherine Breck; "As Told to the Children," by Owen Oliver; "Concerning Health," by Joseph C. Lincoln; "The Market Place for Money," an explanation of the proper place and function of Wall Street in American finances, by Frank Fayant; "The Stoop-Rigged Palfrey," a humorous skit by Ellis Parker Butler; "My Story," by Hall Caine, and much more of interest and instructive importance. The illustrations are irreproachable and the entire make-up attractive in every way. D. Appleton & Co., New York.

It is well occasionally to remember that the only heredity that need concern any of us is the heredity of the results of our own acts. Science has demonstrated as conclusively as it has proven any other fact that no man is bound by the life of his ancestors—that no trait, physical or mental—passed from parent to son, is permanent or cannot be eradicated or transformed. Only our own permanent habits of thought bind us with chains to our past, for this is a *Cosmos*, not a *Chaos*, and the orderly arrangement and operation of all its parts depend and depend solely upon the law of compensation, of effects that follow adequate causes. We can separate and isolate ourselves from all forces except those set in motion by our own thoughts and acts.

There is a vein of genuine, breezy western life running all through *The Pacific Monthly* (Portland, Oregon), that makes it extremely attractive to every shut-in reader who still has a drop of red blood in his veins. In literary contents and mechanical make-up this western child of fertile American brains is fully abreast of its eastern contemporaries, and adds spice and variety to the library or waiting-room table.

The Modern Medicine Publishing Co. announce for early publication a work on Phototherapy entitled "Light Therapeutics, a Practical Manual: Physics, Physiologic Effects, Technique, Therapeutics, Clinical Applications," by Dr. J. H. Kellogg, Superintendent of the Battle Creek Sanitarium.

This work is the result of what might very properly be called exhaustive experiments and applications of the therapeutic uses of light in one of the world's greatest sanitariums. Perhaps nowhere else could such superior facilities be found for working out the problems connected with the use of light for curative purposes. Very little that is authoritative has been written on Phototherapy, so that this may be regarded as the first really scientific work covering the entire ground of this therapeutic agency.

The past few years have witnessed a rapidly growing interest in phototherapy. The time will soon come when all hospitals, sanitariums, and even physicians' offices will not be considered adequately equipped without the most approved solar and electric light appliances for both local and general applications.

"Light Therapeutics" will contain about 225 pages and 75 illustrations, printed in large clear type, and substantially bound in cloth. Price, probably \$2.00 net.

Very few men would ever become dentists if they had not a deep interest in and love for the mechanical side of the profession, which calls for the exercise of ingenuity and skill and the development of new ideas every day of their lives. It would seem, therefore, that *The Technical World Magazine*, (Chicago) would appeal very strongly to every dentist, filled as it is, with the latest products of the cultivated imagination, working along the lines of mechanical engineering and general scientific progress. The May number is exceptionally rich and varied in contents, and should be read by every man who cares to keep pace with the advancement of the modern wonder-workers.

The *Book-Keeper*, a magazine for the busy business man, contains every month much that is helpful, practical and encouraging. "What is Success?" "How a Young Man May Save a Small Fortune in Ten Years;" "The Business of a Steamship;" "Saying 'I Can't,'" and many other interesting and instructive articles make up the April number. The whole magazine is beautifully printed in large, clear, restful type, which is a pleasure to read; \$1.00 per year. The Business Man's Publishing Co., Detroit.

"The world is ruled by dreams," says the Poet in the "Interpreter's House," in the *May American Magazine*. He says:

"The world would go to pieces without its dreams. It is all that holds any one of us to the grindstone—all that forces us to support the chain of convention and the burden we call duty. Somehow there has come into us a vision of a thing we might do or be—and it is what we live up to. My six-year-old youngster is today living up to his dream of being a policeman some day. He walks straighter, strides longer because of it. Four years from now he'll dream of a football captaincy and try to live up to it. Eight years from now, of college honors perhaps, and who can tell of what he will dream at twenty-one? All I know is that of what he dreams then depends his heart's content through life.

Dreams rule us. They are the compelling force of the young, the staying force of the middle aged. Dull them and life dulls with them. Take them from us and we are sodden plodding beasts."

President Taft, in an article in *McClure's Magazine* for May, answers the critics of the Panama Canal. He dares hope that the canal will be finished before 1915, and that the cost will fall below Colonel Goethal's latest estimate of \$297,000,000. Judson C. Welliver describes the latest monopoly, "The National Water Power Trust;" George F. Parker quotes Cleveland's opinions of McKinley, Bryan, Cortelyou and others; Benjamin Brooks makes clear to the layman the mysteries of tunnel-building; Guglielmo Ferrero, the Italian historian, writes "The Vine in Roman History," and a Tuscan lady, who was in Messina at the time of the earthquake, contributes a human document on that great disaster. There are four good short stories, and another instalment of Mrs. Humphry Ward's novel, "Marriage à la Mode."

Donald had been to Sunday school, and on coming home was asked what he had learned. The lesson was the story of Joseph, and the small learner was evidently very full of his subject.

"Oh," he said, "it was about a boy, and his brothers took him and put him in a hole in the ground; and then they killed another boy, and took the first boy's coat and dipped it in the blood of this boy and—"

"Oh, no, Donald, not another boy!" his sister interrupted, horrified. But Donald stood his ground.

"It was, too," he insisted. Then he added, "The teacher said 'kid,' but I don't use words like that."—*Woman's Home Companion* for May.

Adenoids are curious little cauliflower-like growths which appear at the juncture of the nasal cavity and the pharynx. They are often observed at birth, but they seldom cause discomfort until some months later. Then they interfere with respiration and cause the baby to be restless. It tosses in its sleep and wakens suddenly, crying out as if in distress.

If adenoids are permitted to remain they deform the mouth, teeth, throat, chest and face. At their worst they produce pop-eyes and what is called a frog-face. They cause mouth-breathing, with all its attendant evils. They open the way for a hundred and one ills, from rupture of the ear-drum, running from the ears, coughs and tonsillitis, to pulmonary tuberculosis.

A slight operation suffices to remove them. The baby suffers little pain and loses little blood. Out they come—and with them the overgrown tonsils that commonly accompany them. If they are suffered to remain, they may never be discovered. But it is certain that in one way or another, directly or indirectly, they will cause damage.—Dr. Leonard Keene Hirshberg in *The Delineator* for May.

The handsome and attractive picture on the front cover page of the May *American Boy*, showing the circus parade, will appeal to old and young alike. Perhaps the most notable and specially attractive of all the timely and interesting matter in this issue is "How to Play Baseball," a series written by America's greatest diamond stars. The instructive value of these articles cannot be overestimated. The number is also specially strong in fiction. Timeliness and variety characterize the short stories of this number. Among the many meritorious articles are, "McKinley at Antietam," "Our Column," "The Bat," "The Garden in May," "Current Events," "The New Home of the Toledo Newsboys," "Camping for Boys," "Hints to Young Athletes." The usual departments are filled with interesting and instructive matter. In addition there are over 73 illustrations. \$1.00 a year. The Sprague Publishing Co., Detroit, Mich.

Sacred are the lips from which has issued only truth. Over all wealth, above all station, above the noble, the robed and crowned, rises the sincere man. Happy is the man who has neither paints nor patches, veils nor veneers! Blessed is he who wears no mask!—*Ingersoll*.

Good Housekeeping for May is quite an exceptional number in attractiveness, especially for the younger members of the family. "Daddy's Hour" must appeal to every home lover, while the regular departments are all well handled.

The peanut is a valuable food, containing about thirty per cent. albumen, superior in nutritive value to any flesh meat, and needing no government inspection, says *Physical Culture* for May. It contains about fifty per cent. of fat as much superior to Stockyards hog-lard as sunlight is superior to candle-light.

Of course, no one who knows the needs of perfect nutrition, would argue that the peanut is a perfect food—wheat is nearer perfect—but with fruits, figs, prunes, dates, raisins and lemons, at a separate meal, perfect nutrition, so far as food is concerned, can be maintained.

The burden of our changing social order falls upon our daughters, claims the *Woman's Home Companion* for May, and this magazine shows by striking examples and figures how topsyturvy is our way of training girls.

This issue is also distinguished by two features—a poem entitled "The Grandmother," by James Oppenheim, and a full-page drawing by Harrison Fisher, showing Margaret and Gerard, from "The Cloister and the Hearth."

Judges Library, a magazine built just for fun, bears the impress all through of the jovial, optimistic spirit that dominates one of our most characteristically American humorous publications. Keep a copy on your waiting-room table. It will exert a calming effect upon nervous, apprehensive patients and help you to hold your own nerves in check.

The Ransom & Randolph Co. is about to publish an important booklet on "Progressive Dentistry," treating of modern casting methods, materials and appliances, a copy of which should be in the hands of every dentist. It may be had for the asking.

Ethical conduct within the ranks of the profession is a most commendable thing, but when the practice of ethics becomes a mere sentimentality, it often stands as a bar to progress, degenerates into mere old-fogyism.

MINNEAPOLIS, MINN.

If not too late, I wish now to compliment each and every individual who has had any part in bringing out the new *Summary*, and to say to them all that said magazine is about the acme of perfection. Such a journal for \$1.00 a year ought to induce every dentist on this hemisphere to become a subscriber; and when the January number has reached the old world, am sure that the other hemisphere will fall into line.

Very truly,

T. S. CHILSON.

THE DENTAL SUMMARY

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PORCELAIN AND GOLD INLAYS

By A. W. Starbuck, D. D. S., Denver, Colorado.
Superintendent of Infirmary, Colorado College of Dental Surgery.

(Continued from page 357, May Summary)

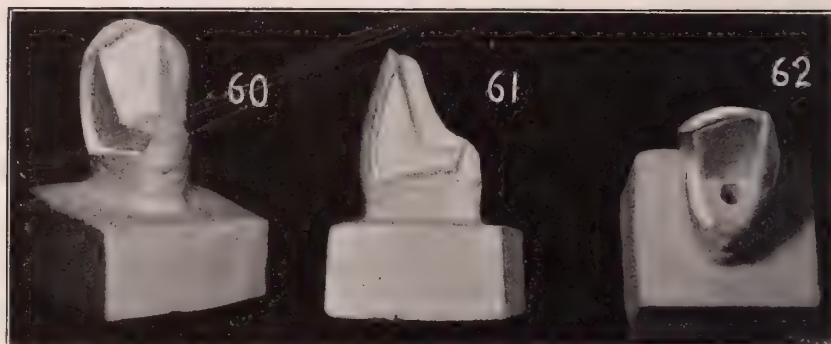
GOLD INLAYS FOR BRIDGE ABUTMENTS.

THE casting process opens a field in bridge work of inestimable value. In the past many teeth have been mutilated for the construction of bridge work, which in the future will be saved almost in their entirety with the use of inlays. We have all experienced the difficulty of properly shaping molars and bicusps to permit a close fitting shell crown. While in the anterior teeth it necessitated the use of a shell crown or the entire destruction of the crown of the tooth for a Richmond crown to permit of bridge work. With inlays a much more sanitary and an equally strong anchorage may be made. It is a system, however, that will necessitate the greatest care on the part of the operator in regard to every detail in the preparation of the cavity adaption of the inlay and attachment of the dummies.

In preparing a cavity for an abutment we should *examine* the *occlusion* minutely and make a careful estimate of the stress that will be brought to

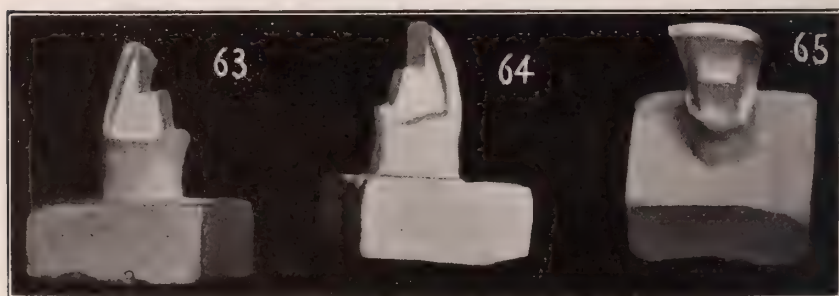
bear upon the restoration. Always bear in mind that there is a certain amount of movement of teeth in their sockets and that the movement may not be equal at both ends of the bridge, hence unless we have an absolute mechanical anchorage the inlay will surely be dislodged.

We will first consider the preparation of a cavity in a cuspid. In most cases it is advisable to devitalize and use an iridio-platinum pin as anchorage. After having removed the pulp and filled the canals, take a carborundum stone and remove the approximo-lingual angle. Then with inverted



Figs. 60, 61, 62 .

cone burs, extend the proximal portion well to the gingival, Figs. 60-61-62, making a flat gingival seat. The approximal portion of the cavity should be extended labially sufficiently to make the labial margin perfectly self-cleansing and at the same time not so far as to show the gold appreciably. The pulpal wall of the main portion of the cavity should be made flat and



Figs. 63, 64, 65

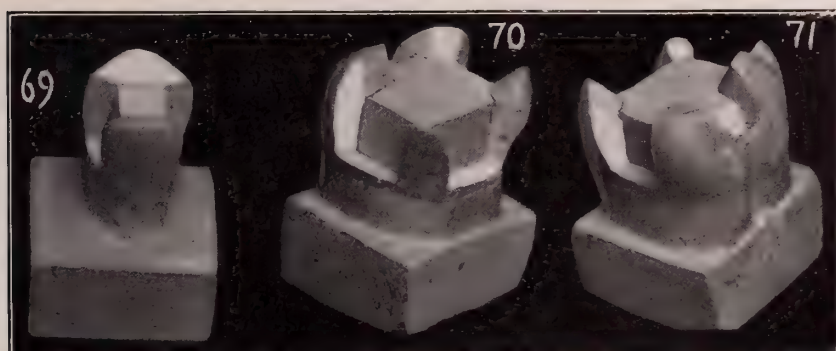
at right angles to the long axis of the tooth. The incisal edge should be cut away sufficiently to permit its restoration with gold. In no case should the labial plate be left standing without this protection. All margins should be at right angles to the surface of the tooth with a slight bevel of the outer third of the enamel. The root canal should be enlarged to admit a 16-gauge iridio-platinum bar and be a depth equal at least the length of the crown of the tooth.

In cases for small bridges a staple inlay may be used without the necessity of devitalizing, as Figs. 63-64-65. The lingual plate of enamel is removed with carborundum stones entirely to the incisal. Each approximal surface is prepared similar to that described above. Then with inverted cone burs make the lingual wall flat and at right angles to the surface. At the junction of the middle and incisal thirds a step is formed with an inverted cone bur. The cavity should be extended to, and include, the incisal edge, which should be restored with gold.



Figs. 66, 67, 68

Figs. 66-67-68 represent a lateral incisor with an approximal preparation for bridge anchorage. In this case the cavity is stepped on the incisal and an 18-gauge iridio-platinum pin extends into the canal from the step. In all cases the important points are, first, extend the cavity to self-cleansing areas; second, obtain a thorough resistance form, and third, procure positive anchorage from all stress.



Figs. 69, 70, 71

In bicusps and molars there should be post anchorage in badly broken down cases. Where the greater part of the tooth is intact, the cavities should include both mesial and distal surfaces extending well to the gingival on both approximal surfaces. Fig. 69.

Figs. 70-71 show a badly broken down molar with the pulp chamber built out with cement. In these cases it is important to have flat gingival

seats with sufficient breadth to withstand stress. All the cusps should be ~~away~~ sufficiently to protect them with gold.

FORMING THE MATRIX OR PATTERN

In small approximal, pit, gingival and occlusal cavities, it is much easier and quicker many times to use the old method of forming a platinum matrix and filling with pure gold, rather than the new method of casting.

We will take for example, a gingival cavity. Here we have the secretions of the mouth to annoy us, as well as the close proximity of the gum margin. The wax has a tendency to crumble under moisture and again it is difficult to remove the wax when the cavity extends beneath the gum. In simple approximal and small occlusal cavities it is a comparatively simple matter to burnish a matrix, within a very few minutes it may be filled with gold and ready for cementing to place and finish.

The method preferred would be to form an orange wood stick to loosely fit the cavity, over this shape a piece of 1-1000 platinum foil as described for a porcelain inlay, (Figs. 30-31, Page 116, Feb. Summary). Remove the matrix and place in the cavity and burnish to place, being careful to spread over the floor of the cavity first, then gradually over the walls and margins. The excess may be trimmed almost entirely away along the gingival margins if the gum interferes. Remove from the cavity, heat in a flame until all carbon has been burned off, cool and coat the surface next to the cavity with a thin solution of chalk in alcohol. Great care should be used in applying the chalk, not to permit any to run into the matrix, as it will cause no end of trouble in melting the pure gold. Allow the alcohol to evaporate, then place the matrix upon a soldering block and fill about one-half with pure gold. Do not use flux as it is unnecessary and causes pits in the inlay. Immediately drop the matrix into nitric acid which will remove the chalk. Place in the cavity and reburnish. Unless the inlay is large the second time the gold may extend to the surface. After cleaning in nitric acid, roughen the surface with a small bur and cement to place. Before the cement starts to crystalize, burnish all margins carefully. Then finish the same as a filling. If there are small tears in the bottom of the matrix there will be no danger of the gold flowing through, if the cavity surface is carefully coated with the chalk.

In large contour cases the preferable method is to use the casting process. When this method was introduced, it seemed so easy and simple that the majority of men rushed at it with little thought of what the probable outcome would be. There is no operation in dentistry more difficult than properly removing and investing a wax pattern. This may seem a strange statement but it is true, nevertheless. In the first place the cavity should be so prepared with parallel walls that there is a certain amount of frictional retention and if this is done there is considerable danger of distorting the pattern in removing.

When it comes to investing the pattern there is great danger of changing its shape.

(To be continued.)

SOME PRINCIPLES OF RETENTION IN ORTHODONTIA

By Martin Dewey, M. D., D. D. S., Karsas City, Mo.

INTRODUCTION.

IN writing these articles on retention, I will have to follow the set plan and state my object in writing the same. It has long been the custom of all great writers before beginning any extensive work or even a single book, to plainly set forth the "why" and "wherefore," where they started and where they expected to end. It may be that this series will start nowhere and end in the same place, but I will have accomplished one object. As Mark Twain has said, "I will see my works in print."

There is little doubt in my mind that some of my friends will accuse me of the aforesaid object, but I will accuse myself of it before they do. Having priority to the claim they will be then forced to give me at least credit for one original idea in the articles.

Dr. Norman W. Kingsley, in a letter to the Alumni Society of the Angle School of Orthodontia, called attention to the fact that the real problem of Orthodontia was that of *retention*. As he says, that regulating appliances have been perfected and the system of facts has been worked out until it is possible to move teeth in any direction, but to keep them there is another thing. He has briefly shown the importance of retention.

When one really grasps the meaning of his words it becomes very apparent that retention, one very important step in Orthodontia, has been neglected. Why this is so I will show you later.

A brief review of the literature will show much progress in many lines. In fact, perfection seems to have been reached in some things. For example, the study of occlusion as the basis of Orthodontia is better understood now than it was a few years ago. The principles, laws, and forces of occlusion have been worked out until very little remains except what we will learn from the study of Comparative Anatomy and Histology. Many articles have been written on the above subject and much discussion has taken place, but not so with retention.

Etiology has also received attention. Our knowledge of the causes of malocclusion has increased greatly within the last ten years. At each meeting devoted to the study of Orthodontia we find one or more papers on Etiology. No longer do we find the inheritance of large teeth and small jaws given much importance, and we may hope that soon we will be unable to find any one speaking of the inheritance of cleft-palate, prognathism, orthognathism, or the forward position of the upper first molars. Acquired and congenital causes have been divided and the literature is quite well filled with the articles dealing with the why and wherefore of certain things. Classification of malocclusion has received attention and I do not think that it will ever be improved upon. Others may adopt private and personal classes and make hypothetical classifications, but the position of the first molars will always remain the true basis. Some may take other

standards, as in one case where articulation has been made the basis of Orthodontia, but the success of false ideals is very short.

Anchorage also has been classified along scientific lines**different principles have been described to such an extent that it is possible to convey a definite idea in a few words without description of mechanical appliances. When we speak of simple, stationary, or any of the other forms of anchorage, the idea is immediately conveyed to our listeners providing they are familiar with Orthodontia. Nothing need be said in regard to the mechanical side of anchorage, for if one knows the principles of anchorage the mechanical device will be very easily constructed. But not so with retention. If we speak of compound reciprocal retention the majority will have little idea what we mean. Some years ago it was said that regulating appliances would be simplified to such an extent that they would be kept on sale at dental depots. At the present time they have been so perfected that very little more can be hoped for. That they are very near perfect is proven by the fact that the so-called improved regulating appliances have often been steps backward instead of forward. The majority of them have been placed on the market by the manufacturers and inventors with the thought of making a few cents even if they were forced to infringe upon somebody's idea. The requirements of regulating appliances are so well understood that nearly all know what to look for when purchasing them. Everything that I have said in regard to regulating appliances may at some future time be said in regard to retaining devices. Some time, we may even be able to buy standard retaining devices, as we are now able to purchase regulating appliances.

If one was to read what has been written in the past on retention he would learn very little that is truly scientific. The articles are few and almost without exception have dwelt with some one's "pet" retaining appliances rather than the principles of retention. Look over the programs of the meetings which have paid attention to Orthodontia, and retention is crowded to the background. Even with the American Society of Orthodontia papers on retention have been very few. Notice the proceedings of the third meeting of that society and the only paper on retention died without discussion. However, the classification there given has lately been revised to meet the idea of one writer, published in a text-book, but no reference made to what was the first attempt, so far as I know, at a paper on retention, devoted to the principles of retention. Articles on retention are few and they very much resemble the early writings on Orthodontia, when appliances were shown and no reference made to the scientific side of the case.

A great many of the regulating appliances have been shown on paper with which it would have been impossible to have accomplished the shown result. Likewise with retainers, cuts have been made, clinics have been given and not one word said as to the principle, why it was so constructed,

**Angle's classification.

or what scientific value it had over other retaining devices. Occlusion is the basis of Orthodontia, and I will also say that it is the basis of retention. All will agree with me that we must have the proper occlusion in order to get the teeth to remain where we want them. The forces of occlusion which are the normal relation of the inclined planes, harmony in the size of the arches, and normal muscular pressure must be had: but we must have more than that. In order to understand retention one must be familiar with the growth of the dental apparatus. Are you not tearing down the apparatus that nature built and trying to build a better one? In order to do so you must know what forces and factors will aid you in holding the teeth in the proper place after they have been put there. It has been said that occlusion would hold teeth in place, which is true, but we must have more than the normal relation of the incline planes, for occlusion is more than that. It is as impossible to give a perfect definition of occlusion as it is to define "good." One question which has been asked over and over is, "How did you retain it?" The question used to be, "How did you move them?" but it is now given way to that of retention. If you should give the principles, the question would be, "What appliance did you use?" If the principles of retention were mastered the appliance would be a secondary consideration.

Some may have asked, do we have principles in retention? We do and they must be considered. To ignore them is to invite disaster and failure. They demand recognition the same as the forces of occlusion, and are as important. The mechanical side of retention can be classified the same as anchorage and it will simplify the construction of the retaining appliance. Natural and mechanical forces must be taken into consideration and the latter used to assist the former. As our knowledge of Histology increased we had to depart from old ways. An example of such departure can be found in the "Principle of Retention," as given at the last meeting of the Alumni Society of the Angle School of Orthodontia.

In writing the following articles on Retention, I shall endeavor to show what retention is or should be, and the knowledge we should have of the subject. I will classify the principles and forces of retention, and will lastly show appliances which have been constructed according to those principles. I may give little that is original and will try to give credit to whom credit is due. If I disagree with some one he may hold the grudge against me and not against the editor or publishers of this journal. I will compliment the readers by using plain and simple language and if you do not agree with me you will at least understand me.

I have tried to give an excuse for trying to write a series of articles on retention. The principal reason is that I think retention had been neglected in the past. The fact that this neglect exists is to be regretted by all who appreciate the importance of retention. Retention being an important part of orthodontia, it then follows that the bringing together of what knowledge there is collectable would be of advantage to all.

In 1903 when I wrote my first article on retention, I found but one text book which I examined that was published at that time, that contained any attempt to give a definition of retention. The author of the same, no doubt like myself, thought it an easy matter to define what appeared to be such a simple thing. Considerable space had been given to the consideration of the importance of retention. In Dr. Angle's Sixth edition of *Malocclusion* he gives that important rule for the application of force, viz.: to antagonize the tooth against its backward tendency only. That may be considered the first concise statement that was ever made in regard to retention. At least, it is the first one I find.

In McDowell's work on *Orthodontia*, we find he has attempted to classify to a certain extent the forces of retention, but falls far short of what we understand them to be at the present time. He also gives a definition of retention which is far from being complete. Still, the attempt which he made toward classification was probably the only thing done at that time, but like his definition of retention, it falls short of being complete. He says, "Retention is the science of holding teeth that have been moved in place, with mechanical assistance to prevent them from returning to their former position." The definition is quite good for what was understood as retention at that time. When I wrote my first paper I thought it easy to define retention also, but after much more study I find it more difficult than it was at that time. I am not as well pleased with my former definition as I should be, and part of this displeasure is the result of our views of retention having changed. Also, you are aware that there are certain words which at first glance seem easy to define, but after more thought it is not so easy. Retention as applied to orthodontia, is one of those. The definition which I gave in my paper before the American Society of Orthodontia is as follows: "Retention is force applied to teeth to hold them in certain relations to other teeth." This definition is defective in that it is too narrow. It is like some retaining appliances, it does not include enough. We do not want to hold teeth so they will maintain a relation to other teeth, but so they will maintain and assume a relation to all parts of the face. The keeping of the teeth in occlusion is only one part of retention as the correction of malocclusion is but one part of the practice of orthodontia. You may begin to see what I meant when I said that it was difficult to give a definition of retention; one that would include all that we wish and not possess anything which we do not want.

In regard to the part of the definition which says: "Retention is an applied force * * *," some have said that retention was not and could not be a force. Having applied force to move teeth into occlusion, we remove the force and hold them there so they will grow "fast." I have heard the above statement so often I have been led to believe that it was the opinion held by the majority of men. It is true you apply force to move teeth and you must have force to retain them. Some have said that if force was applied continually that the teeth would never grow solid; meaning

that teeth must be held rigid in order that they become firm. If you do not want them to resume their normal attachment I say to construct a retainer which will accomplish the above object, viz.: hold them rigid.

In regard to why I use the term "force" in defining retention when it has so long been associated with tooth movement I will try and explain. Force is divided into active and passive. Also, action and reaction is equal. If a tooth is trying to return to an old position of malocclusion, you must have force enough to prevent it. It is true that you may have your retaining appliance so it is passive, that is, it will not exert any force until the tooth pushes against the appliance and then the retainer begins to exert force to overcome the backward tendency of the teeth. All objects contain energy in some form and retaining appliances must possess enough energy to prevent the backward tendency of the teeth. If a retainer is constructed from too light a material we will find that the teeth will get the best of the "tug of war" and will drift to some position which they should not occupy. The force exerted by the retainer must be sufficient to overcome the force exerted by the teeth. We even have more than a passive force in retention. It is often to our advantage to use an active force in some cases, an example of it being in the use of active intermaxillary retention in Class II and III cases. Also, the principle given by Dr. Angle at the last meeting of the Alumni Society of the Angle School of Orthodontia, is one, the beauty of which depends on the proper application of an active force.

You now see that you not only exert force to maintain certain relations of the teeth, but you also wish to produce certain changes and relations, not only of the teeth but also of the peridental membrane and alveolar process. Taking these things into consideration it is necessary to modify our definitions of retention to meet the present conditions. I would now say, "retention is the application of force to maintain and produce certain conditions in the dental apparatus which we term normal occlusion." A shorter definition and one which I like better is, "retention is the application of force to maintain and produce normal occlusion." Some will say we should have normal occlusion before we take off the regulating appliance. That is true if you consider that occlusion is only the proper relation of the inclined planes; however, normal occlusion is more than that. It is the sum total of all the forces which go to make up the proper dental apparatus according to type. We have often spoken of the forces of occlusion as being the relation of the inclined planes, harmony in the size of the arches, and normal muscular pressure. It is very seldom that we have all of these forces normal when the regulating appliance is taken off, and as a result of these conditions not being normal we are compelled to use retaining force. Also, very often we take off the regulating appliance as soon as we have the proper relation of the incline plane and the teeth have not settled as they should. For example, we may not have the proper over-bite in some cases and must allow for the anterior teeth to elongate before we will have the proper occlusion according to type. To adjust a retaining appliance so the

teeth would be held rigid would be one of the worst things that could be done for that case. In constructing your appliance to meet the requirements in that case, you will make one that will comply with the definition, which "maintains and produces normal occlusion." Likewise, you have changes which take place in the alveolar process and periodontal membrane which must be taken into consideration, and unless you have obtained those changes you cannot say that you have normal occlusion.

I have said before that we made use of active and passive forces in retention, but the forces of retention are also divided in another way. A classification that is based on the origin of the force. Those forces which are the result of the laws of nature are termed natural forces, and those that are derived from mechanical means are termed mechanical forces. The natural forces are those exerted by nature's laws. They are by far the most important, yet they have been the most ignored and misunderstood in the past, and consequently innumerable failures have resulted. Teeth returning to their former position, and sometimes in worse positions than they first occupied may in many instances credit their return trip to a neglect on the part of the operator to reckon with the natural forces of retention. Many cases of malocclusion are but the result of a disturbance of nature's laws and no matter how well you may have corrected such malocclusion, if you fail to enlist the natural forces of retention, you cannot hope for success to the highest degree. Briefly, you might say the natural forces of retention are the same as the forces of occlusion. That may be true, but the three forces of occlusion which are generally given are not sufficient to include all that plays an important part in retention. The natural forces of retention which must be taken into consideration and utilized are as follows:

1. Force of the incline plane.
2. Harmony in the size of the arches.
3. Normal muscular pressure.
4. Normal interproximal contact.
5. Normal histological structures.
6. Normal atmospheric pressure.

The aforesaid forces are the ones which will retain your cases and build a permanent retainer which, as Dr. Noyes has said, is made out of inelastic fibers and bone-spicules. Mechanical retainers are only a means toward an end; that end is the allowing of nature to reassert herself and build a normal denture.

Mechanical forces are those exerted by mechanical means. They are used and occupy the same relation to the finished case as the scaffolding does to the completed building. They only assist the workers, osteoblasts and fibroblasts to do their work.

Mechanical forces of retention are divided into simple, reciprocal,

occipital and intermaxillary. Reciprocal is divided by the principles used in primary and compound, while intermaxillary is likewise divided into primary, compound and stationary. Each one of these divisions is so made from some mechanical principle involved. If the principle is understood it is an easy matter to construct the appliance. In my next article I will take up the forces in the order named and try to define and show the importance of each.

(To be continued.)

PACKING AND VULCANIZING WITHOUT REMOVING TEETH FROM MODEL

By W. L. Gares, D. D. S., Columbus, Ohio

USING rubber in lieu of wax in building up a part or a whole body of a denture is not a new idea, but any one who tries it will find that it is a very tedious and often unsatisfactory process. I never could see any particular advantage in it except in special cases, and even then it is hard to get a nice smooth case. An idea of using rubber in conjunction with wax, in special cases, occurred to me a number of years ago, which proved most gratifying, both in the ease of manipulation and uniformly satisfactory results.

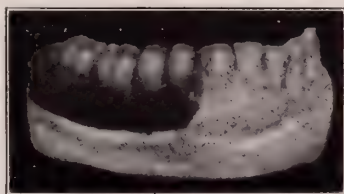


Fig. 1.

In making a partial denture, consisting of bicusps and molars and wishing to fill out the buccal sides well with rubber, and also desiring to use spring clasps, or bars, as suggested by Dr. E. C. Mills in the January number of the *Dental Summary*, 1909, we all realized how important it is that the teeth and clasps be kept absolutely in place during the process of flasking and vulcanizing; otherwise we have a lengthening of the bite and when we insert the denture, we find the natural anterior teeth will not occlude, thus causing an excessive grinding of the plate teeth, or necessitating the making of a new denture. With the correct bite to start with the following method will obviate all the troubles mentioned: After grinding the teeth to place and waxing up the lingual surface, build out the buccal surface with pink rubber (or any color desired). Having model clean, start with a flat strip of rubber and with a heated spatula press rubber to place around the necks of the teeth; then add another strip, weld it

together by pressure (you cannot smooth it up like you would with wax) and so on till you have the desired contour. Where the teeth do not touch the model, trim the wax from under the points of the teeth and pack rubber in the spaces. This will keep the teeth in position when the wax is removed from the lingual surface after flasking preparatory to the final packing of the rubber. You will not be able to build out the buccal surface with rubber as smoothly as you would with wax especially around the teeth, as the rubber will have a tendency to draw away, so right here is where we "turn the trick" by using a little wax to smooth up around the teeth and level up any uneven surface of the rubber. The edges of the rubber will not always cling to the model so here use a little wax to paste them down. Do not use wax lavishly, yet do not be afraid to use enough to smooth up everything nicely. (See Fig. 1.) In flasking, let the plaster come up over the rubber and well up over the crowns of the

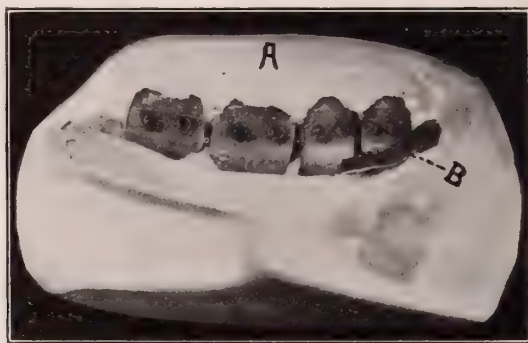


Fig. 2.

teeth. (See Fig. 2A). Oil and finish flasking and when separated and lingual wax removed, the teeth will be on the model just where you ground them and if clasps are used they will also be in their proper place and held fast by the plaster. (Fig. 2 and Fig. 2 B). Always heat the flask till the wax is soft before separating, so as not to break the plaster you have covered over the teeth or disturb the clasps which you would be apt to do if the flasks were opened cold. The wax used in smoothing up the rubber and around the teeth will be absorbed in the plaster when heated up for vulcanizing, and the ordinary packing of the rubber and bringing the flasks together while hot will cause pressure enough through the interspace and under the lower ends of the teeth to force the rubber on the buccal surface, to take the place of the vacuum caused by the disappearing wax. I would suggest, however, that where the teeth are ground close to the model to wax up a little heavy at the heel, and in the final packing, by placing a little extra rubber at that point you will get all the pressure necessary to fill the vacuum referred to above.

I might add here that this is only another phase of the "disappearing model" of which we have heard so much of late.

THE SOURCES, DISTRIBUTION AND RELATIVE IMPORTANCE OF THE DUAL LIFE IN HUMAN TEETH.*

By D. D. Smith, M. D., D. D. S., Philadelphia, Pa.

IT MAY seem incongruous and altogether out of harmony with the present theories of modern dentistry, for me, a strenuous advocate of the permanent preservation of natural teeth, to say, that as they are commonly found in the human mouth, teeth are a menace both to health and longevity; or to put the same truth in another way, the loss of all teeth from the uncared-for mouth in adult life, would be a safeguard against many systemic diseases, and would bar, to some extent at least, the contagion of contagious diseases and add considerably in the aggregate to the sum of human life.

However sensational these enunciations may appear, they are but a hint to real conditions existing in human mouths on every hand, conditions that await recognition by dentistry and medicine alike.

There is abundant evidence, as we may have occasion later to show, that dentistry with all its pretense to science and investigation has done but little for the suffering, which comes to humanity through adverse mouth conditions. Excluding some instruments and appliances for more dexterous manipulation in the handiwork of filling teeth, dentistry is not markedly advancing along helpful or educational lines. If permitted the use of a military figure, we would say, dentistry as it presents today may be not inappropriately described as on a kind of dress parade; if it has movement, it is but as the movement of soldiers "marking time" in drill. It exhibits no change of base from year to year or decade to decade; its vaunted progress is more apparent than real.

It is true that theory after theory has been promulgated, process after process brought forward as improvement, but for the most part these theories and processes have been, or are being discarded; to be recast in the old time-worn moulds of methods, materials or manipulation.

It is pertinent to inquire,—Is dentistry in any true sense doing the work of conquering disease in the human mouth? Is it with assurance or even commendable success interposing a barrier to decay in teeth? Who shall presume to say "yea," to these inquiries? Such reflections ought certainly to lead to some concerted investigation respecting the untenable theories and teachings of the profession. There is an army of about 30,000 practitioners (some estimate 35,000) in this country alone, working ostensibly to stem the inroads of *decay* in human teeth. Such a vast array of numerical strength should exert great influence for the good of all the people. Is such the case? I trow not, for dental caries in the childhood and youth of this country seems to be on the increase in spite of the boasted supremacy of our American dentistry? It is estimated that four-fifths of

*Read before the Indianapolis Dental Society, May 3, 1909.

the children of this country and quite as great a proportion of those of the United Kingdom are suffering in one form or another from diseased or defective teeth. Caries is so prevalent that many have come to regard it as the normal condition of childhood; it remains for dentistry to dispel this most erroneous impression. Diseased teeth should no more be regarded as normal in children than pulmonary consumption. Does dentistry of the present reach out at all for the relief of the masses? Are not the benefits which it confers limited almost exclusively to the few? And these benefits, when they come, do they not more frequently come through expenditure of time and money, privation and suffering wholly out of proportion to the good conferred?

The complaint that comes from all civilizations is sufficient attestation of the fact that human teeth under present treatment, or lack of treatment, are the cause of untold discomfort and much suffering. How often we are compelled to listen to complainings and querulous questionings from dental patients: "Why must my teeth decay and I suffer at the hands of dentistry, when in other respects I am in good health. My father had good teeth. My grandfather lived to be 85 years old and never went to a dentist," etc., etc.

The one object of this paper is to bring to light certain truths not generally recognized; if recognized at all they are wholly disregarded in the teachings of dentistry; these truths involve the well-being of the great mass of the laity who should be informed respecting matters of such importance. We are in the first decade of the twentieth century, and standing in the light of unprecedented discovery and advancement in every department of science. But is the dental profession bringing to light anything of wide application for the benefit of suffering mankind? Are we not rather as abject slaves, worshiping idols we have ourselves set up, while we acclaim the present teachings and the present practice of dentistry supreme? And yet, did we know the truth, the field of dental science and dental service is practically unexplored. Unless the plan and purpose of dental teachings and dental treatment shall undergo radical revision, dentistry, in the near future, will certainly fail to attain any worthy professional end. To continue in the well-worn ruts of present theories and present line of practice seems criminal incompetency. A moment's reflection will convince the most skeptical that dentistry has to do with most important organs in a most important cavity. At no point in the economy is the maintenance of health more important than in the mouth, for it is the cavity of intake for the entire system. It is here that all commissary supplies are received and tested; all foods macerated, insalivated and prepared for the initiatory stages of digestion, and yet the mouth is the seat of many conditions markedly adverse to the healthful performance of its functions. It has been demonstrated that disease is largely inspired by bacterial invasion. It is equally a matter of demonstration that the germs of systemic disease are

propagated in debris and bacterial plaques found in connection with untreated teeth. On many teeth, solid matter, alive with bacteria exists; decomposing food remains, abnormal secretions and excretions; gases emanating from decaying teeth and putrescent pulps; sputum, pus and effete matter from inflamed mucous surfaces, and this all maintained at the high normal temperature of 98.6 degrees F., a temperature conducive to rapid tooth decay, as well as one greatly favoring bacterial propagation. These and other inimical and disease-inducing conditions are common in the mouth, not one hour of the day, but twenty-four hours of every day; not one day in the year, but three hundred and sixty-five days of every year. In view of these complex states and conditions, no one, I think, will question the statement that maintenance of health in the human mouth is not only important, but that it is most important, and that nation, that family, or that individual that gives the most enlightened attention to conditions of health in the mouth, will surely enjoy the better state of general health. Dr. Osler of Oxford says in "The London Lancet," "If I were asked to say whether more physical deterioration was produced by alcohol or by defective teeth, I should unhesitatingly say defective teeth." ("Defective," or more properly, *diseased* teeth, has a meaning far deeper and more significant than decay of the teeth.) Dr. G. V. I. Brown says: "If the mouths of the children in our public schools could be systematically examined by competent persons, and instructions given and enforced with regard to the intelligent use of brushes and anti-septic solutions, the death rate of this country would be very materially lessened, the percentage of illness much reduced, and a stronger and more vigorous race result in consequence of these prophylactic measures."

It may be affirmed without fear of contradiction that no teachings, past or present, emanating from either medicine or dentistry, embody or in any sense grasp the true meaning of the dual life distributed to human teeth.

The so-called special physiology of dentistry, all unconscious of the dual life in teeth, has followed in the wake of general medical teachings, and persistently confined attention and study to one source of tooth life, viz.: *pulp life*, as though all vitality in the tooth emanated from it alone. We shall never understand dentistry in its wider meaning until we recognize and grasp the significance of the *dual* life in teeth—the pulp life in which they originate and the pericemental life through which they are held in relationship with the jaw. Whilst it is clearly recognized that a tooth cannot spring into being without pulp life, it should also be recognized that a tooth cannot continue long in service without healthful pericemental life. The nutrition and sensation derived from the pulp is wholly distinct and wholly independent of that other source of life which is derived from the pericementum. It is true that the pulp and pericementum act conjointly in the formation and maintenance of every functionally perfect tooth; and it is also true that maintenance of life in the pulp is dependent

on pericemental life, but pericemental life is in no sense dependent on the pulp life of a tooth. The pulp life may be abridged or wholly obliterated, as is often done, and that at any period in the life of an erupted tooth, all without appreciable interference with the life which the tooth derives from the pericementum. How, then, shall we interpret the meaning of these two separate and distinct sources of life with which every tooth is endowed; both independently derived and independently maintained, and each wholly separate and distinct from the other?

If we consider the matter more in detail we shall find that the life with which the pulp is endowed reaches and controls not only the internal structures of the tooth—all of the dentin, all of the tubular and interbular matter, but all of the enamel also. The pulp is the source of nutrition and sensation in all the tissues of the tooth, excepting only the cementum and pericementum. When the pulp life of a tooth has been destroyed, or from any cause is wanting, there is immediate, complete and final cessation of sensation and nutrition in all the tissues of the tooth save that of the cementum and pericementum only. In the erupted tooth there is a perfect system of enamel nutrition, operating through the dental tubules and connective tissue, derived from the pulp. The teaching that there is a special enamel membrane for enamel nutrition is purely hypothetical, it is wholly unsubstantiated by reason or fact.

All life, all "blood supply" derived from the pericementum is distributed to the cemental tissue only. Except a slight, indefinite, unappreciable anastomotic relation with the tubules of the dentin of the root, a condition seldom distinguishable, the pericemental life of a tooth has no apparent or appreciable connection with the pulp life. In the destruction and extirpation of the pulp, when the decomposable matter has been removed from the pulp cavity and from the dentin, there should be no disturbance of the cemental or pericemental function. In an article that recently appeared in the *Dental Cosmos* the writer says, "If Dr. Smith's theories are correct, our present teachings need revision." This is certainly correct. There is so much of error in practice, as well as in the teachings of dentistry to be reformed, that revision cannot begin too soon.

A tooth deprived of its pulp life, especially if it be in the mouth of an adult, is still a tooth, in all its essentiality. The color may be slightly impaired, but its utility, durability and comfort in the mouth, if under intelligent treatment, is not appreciable.

Dentistry in the past has greatly overestimated the importance and value of the pulp life of teeth after these organs have reached full maturity. For three decades the teachings of dentistry have centered upon the pulp, to the entire neglect of the far more important life in the pericementum. The result has been that thousands of mouths have been filled with pyorrhetic inflammation and tens of thousands of otherwise good teeth have been lost or hopelessly loosened, and by this means the door of infection has been opened to many systemic diseases. Disregarding

the well-known fact that pulpless teeth, when properly treated, have proven comfortable, useful and enduring. immature and unobserving teachers have advocated the conservation of the tooth-pulp at all hazards; (asked why, not one could give an intelligent answer.) Inventive ingenuity and skill has been expended on instruments, devices and machinery—appliances for the *filling of teeth*; cavities of decay from the size of a pin head in the crowns of molars to the wasting of one-half or more of the visible tooth, have been filled and refilled with every known material—gold, tin, amalgam, gutta percha and cements to conserve the pulp-life.

Devitalization of pulps has been unsparingly condemned, and the “capping” of those exposed advocated; but with what results? These: Patients have been called to endure privation and suffering, and in not a few instances have given up life even at the hands of dentistry, all because of the false theory and mistaken views set forth respecting the importance of pulp-life in a tooth. It is just dawning upon the few that a tooth-pulp, after the crown has been fully consolidated, is not that holy, unapproachable thing that the false teachings of the past have made us believe it to be. As life in the pulp may, through disease, become practically obliterated without injury to the pericemental life, so pulp-life may be *forcibly destroyed* without injury to its alveolar connections.

In *Items of Interest*, April, 1908, may be found an article entitled, “The Genesis of the Blood Supply to the Teeth,” by I. N. Broomell, D.D.S., that may be properly noted in this connection. This writer in an article embracing seven pages of reading matter and eight pages of illustrations, some of the latter being pictures from original dissections of calves’ jaws, reaches the following conclusion: “The blood supply to growing teeth comes from the walls of the follicles independent of the main artery” (meaning by this the superior and inferior dental branches of the internal maxillary). “Mature teeth are supplied with blood from the main maxillary arteries, but this blood supply is received through the numerous common vessels which traverse the cancellated bony tissues of the jaw and alveoli, forming free anastomosis, some of the vessels of which pass through the root apex.” And later, in the discussion of the paper, Dr. Broomell stated, “At the present time I am very much of the opinion, although I am not ready to make the statement, that there is no direct blood supply from the main artery to the root apices. I believe the blood supply is one which is established after the complete formation of the alveolar dental membrane by a series of anastomosing vessels around the apical space, these vessels coming via the alveolar walls as well as from the gingival tissues.”

It appears from the records of the discussion of this paper, that the seven participants were all practically unanimous in endorsing the opinions of the leader of the discussion, who said: “I consider this paper one of the most important that has ever been presented before this society”—The American Society of Orthodontists. If any one was conscious of the great

mistake of the essayist, none seemed willing to call attention to the matter.

Where, in the human anatomy, can the blood supply to a part, corresponding to this description of the supply to a tooth, be paralleled? First, as it would appear, the blood is driven to the alveolar and so-called gingival tissue (who understands what gingival tissue is, or through what channels blood is supplied to it?), it is then spread out into capillaries, after which it is regathered by anastomosing vessels into arterioles, and these, coursing along the alveolar walls, finally find their way into the "apical spaces" (where and what are the "apical spaces"?), thence through the apical foramen, when it re-expands into the dental pulp.

Are we to believe that the "blood supply" to a tooth all goes to the pulp, and that it all takes the tortuous and complicated route indicated, because the author of the paper failed to find vessels running from the "main artery" through the apical foramina in his dissections of the calf? What shall be said of the beautiful dissections made by men skilled in the art who have preserved to us in museums, specimens from human anatomy showing undisputed prolongation of vessels from the "main artery" to the apical foramina?

This whole question of blood supply to a tooth is quickly determined if we inquire how the life of the tooth is maintained, and we know it is maintained, when the pulp is destroyed. The fact that there are two distinct and wholly independent sources of nutritional life to a tooth, and that consequently there are two wholly independent sources of blood supply to these organs, seems to have been wholly without recognition in this paper, or in the discussions. The anatomical formation of the roots of teeth and their surroundings are such as to render it quite improbable, if not impossible, that the blood supply to the pulps of teeth should come from anastomosing vessels in the alveoli, or from any other source than the branches or "twigs" springing from the superior and inferior dental arteries, in number corresponding with the number of apical foramina in the roots to be supplied. These apical foramina certainly exist and give passage to arteries or arterioles corresponding to the number of them; they give passage, also, to a positive nerve sheath, whose course is along the dental groove in both jaws. In pulp formation there is most intimate association of these nerve sheaths and arterioles along their entire course. Who has not at times seen pulsation in dental pulps? A phenomenon that was never witnessed in the pericementum or in any of the vessels of that membrane. Pulp pulsation would be impossible under any circumstances if the blood supply was furnished by anastomosing vessels coming from alveolar walls or gingival tissue.

Why this great contention over blood supply to a tooth until we know something of the office of the parts of the tooth to be nourished by it? How could the *blood*, if supplied to a pulp in the impossible way suggested, change the formation, growth or orthodontic movement of a tooth?

Dentistry must awaken to a study of the relative importance of pulp

and pericemental life, or it will stand where it now stands, the jest of medicine and the dread of the laity. Some one has said that more than half, or about sixty per cent. of the teeth that are lost, are lost from diseased conditions of the external tissues of the teeth. (This would seem somewhat exaggerated). All necrosis in these tissues begins in the pericementum. The pericementum controls only that thin bone covering of the root known as the cementum, but in this it controls the most important source of life to the tooth. Dentistry has not yet generally recognized that the most important part of a tooth is not its crown, but that it is the *root*. The life of the root preserved, and the essential part of the vitality of the tooth is preserved. The life of the root injured or destroyed, and the indispensable life of the tooth is injured or destroyed.

When the pulp of a tooth is dead, there is presented the anomalous condition of living bone (for the thicker layers of cementum are analogous to true bone) united to and surrounding dead dentin: and yet the functional life of the cemental tissue is, in most instances, perfectly maintained by the pericementum. When the decomposable pulp matter is removed from a well-formed tooth-root, the function of sustentation, if not of nutrition, should be as perfectly maintained in the cementum as in cases where the pulp-life is intact. One writer has promulgated the theory that when the pulp of a tooth is destroyed the arterial supply previously distributed to the pulp is in some mysterious way diverted to the externals of the root. The absurdity of this theory will hardly fail of recognition by the most superficial thinker.

Increase of cemental tissue—exostosis—is more common on devitalized teeth than on teeth with living pulps. A probable reason for this, as would appear, may be traced as an effort of nature in certain cases, to increase nutritional life in the root, by depositing laminae of living bone upon the cementum, thus giving the pulpless tooth increased substance of living bone, and through it added mechanical stability in the alveolus.

Pericemental life is more important than pulp life, to just the extent that the root of a tooth is more important than the crown. What value has the crown of a tooth, however perfect it may be, unless supported by a vital, healthy root? What value has a tooth-root in the alveolus when it is loose through lack of cemental tissue, or because of necrosis and absorption of supporting structures? It is far better removed under such conditions than standing a perpetual irritant, a hindrance to mastication, and fostering and perpetuating septic conditions in the mouth.

A vital, healthy root, even though devoid of crown, has the essential life—the *vis-a-tergo*—of a perfect tooth. A tooth-root enveloped in living cementum and having a perfect pericemental membrane has all the capabilities of comfort and durability that attaches to any tooth with a living pulp. Such a root has also the possibilities of complete esthetic restoration.

On the other hand, a tooth having its pericemental life injured, whether through necrosis of the cementum, as in the alveolar pyorrhea, or through

the piercing or splitting of the root, or through injury from any other cause, such a root is irrevocably crippled to just the extent of the injury to its pericementum. If the pericemental life is *destroyed*, permanent loosening and eventual exfoliation of the tooth is inevitable, even though the pulp may be alive through all stages of the necrosis.

Pyorrhea, that common and most insidious inflammatory condition in the mouth of adults, loosens and destroys teeth, by its attack upon pericementum, cementum and alveolus, and that while pulps are yet alive. Pyorrhea seldom or never attacks the tissues surrounding devitalized teeth.

It is not a "constitutional disease," although many so-called authorities have mistakenly labored to impress the profession that it is a disease. Pyorrhea is a purely local inflammation confined to the external tissues of certain teeth, and caused wholly by local irritants, or by cemental and pericemental conditions. The condition of certain roots, dense in structure, practically denuded of cementum, is sufficient to provoke the inflammatory outbreak, but in these cases the inflammation is in no sense due to constitutional causes, as gout, rheumatism, uric acid, or to any other systemic condition. Conversely, mouth pyorrhea, with its train of purulent inflammatory products, may be and frequently is the cause of these and other constitutional disturbances. The fact that pyorrhea is not in any sense constitutional, is demonstrated by the complete cure effected by extraction; it is also demonstrated in the arrest and cure effected in every case by removing the cause from the root when inflammation and necrosis have not progressed to an extent to admit of rotating the tooth in its socket. Efficient prophylaxis treatment will *prevent* the appearance of pyorrhea in any mouth. Teeth that have lost the mechanical and vital sustentation of the alveolus and pericementum, through inflammatory necrosis of these tissues, will not retighten in the alveolus, even though all irritative causes have been removed and all inflammation be arrested.

Neither constitutional medicaments, selected foods nor abstinence will avail anything in the treatment of mouth pyorrhea. As in every other pathological condition, attention should be directed to removal of the cause. The cause of pyorrhea is infection on and about the teeth in the mouth. This infection removed, and frequent prophylaxis treatment with local medication understandingly maintained, the cure is certain.

How important in the searchlight of these truths, that dentistry turn from its mechanics, and center investigation to some extent, at least, upon this neglected but most essential pericemental life of the tooth. *And this intelligent care for the externals of the teeth is in the main the new oral prophylaxis treatment in dentistry.*

The term Prophylaxis is so often confounded with "Prophylactic" that, in attempting to define it in the article, "Six Years' Work in Oral Prophylaxis," I wrote of it as follows: "Prophylaxis is often confounded with prophylactic; and the terms are often improperly used by both speakers and writers. The two words cannot be used interchangeably, as they

have separate and quite distinctive significations. These terms are also improperly used as synonyms for asepsis, oral hygiene, oral massage, or any other term for what is supposed to ward off disease of the teeth."

Listen to an extract from an article in the *Dental Cosmos*: "Prophylaxis has invaded the domain of nearly every disease, and its science and practice is daily increasing, and its field of usefulness becoming better known."

Who can wonder that the medical profession holds dentistry in contempt when reading such jumbled nonsense as that?

Prophylactic measures may be employed to ward off constitutional diseases when preventive remedies from experience commend themselves, or when experimentation in this direction seems warranted, but to affirm that "prophylaxis has invaded the domain of nearly every disease" is meaningless.

It is to be hoped that prophylaxis treatment as applied to the teeth is becoming better known, but it cannot at present be said to be "well understood," neither can it be said that it is applied or practiced as a science. J. P. Corley, in the *Cosmos*, says: "The average dentist knows little of prophylaxis, cares less, and tells his patients nothing. The average college teacher knows little of prophylaxis, cares less, and tells his student nothing. The average association habitue knows little of prophylaxis, cares less, and tells his fellows nothing."

In defining the term prophylactic and prophylaxis, we would emphasize the fact that "Prophylactic" is a word used both as an adjective and as a noun, and that it relates to therapeutic *remedies*; remedies that may be administered internally as preventatives; but prophylaxis relates to remedial or preventive *treatment*. The dictionaries generally pointed to the distinction here made when the writer, in 1898, presented the first paper on this subject, under the caption, "Prophylaxis in Dentistry."

Webster, Worcester, the Century, and the Standard dictionaries all coincide with the definition implied in the following quotation from "Science:" "The germs do not appear to be very tenacious of life, so that an efficient prophylaxis may be readily exercised."

Briefly, then, oral prophylaxis is a surgical treatment of the mouth and teeth, as distinguished from the administration of a medicament or a therapeutic remedy, for the prevention and arrest of inflammatory or diseased conditions of the oral cavity. It is not constitutional medication, neither is it of the nature of a wash nor a germicide.

The statement that all exposed tooth surface, in its natural state is bacterially infected, is incontrovertible. And when it is considered that in the normal mouth, from eight to twenty years of age and later, there are fifteen to thirty square inches of such surface, the momentous import of these conditions becomes at once apparent.

Because of their location, the teeth are continually subject to infection, re-infection, decay, re-decay, and to final destruction. Teeth vary greatly

in character and composition. Through environment they are subject to heat and cold, chemical liquids, and to inimical atmospheric influences; they are used for the maceration of every variety of solids and semi-solids; raw and cooked foods; readily decomposable nitrogenous substances, starch, carbohydrates, fruits and nuts. They are immersed in oils, fats, vegetable and mineral acids, alkalines, condiments, medicines and numberless combinations of hot and cold drinks. If we conceive of recently erupted teeth to be so much bone or ivory surface, planted in the mouth, where, night and day, waking and sleeping, they are exposed to all the varying conditions of this cavity, it becomes less and less a matter of incredulity or wonder that in a mouth with a full complement of natural teeth, there should be stagnant septic matter prolific of bacteria, working constantly to destroy the teeth and infect the general system.

There is infection in the breath, in decomposing food remains, in the inflammatory products of the mouth, in pus, in gases from decaying teeth, in putrescent pulp tissue, in sputum, and in the products of food decomposition, and in all mouth debris. These adverse agents *are in the human mouth*, and when raised to the normal temperature (98.6) of this cavity, they become originators of tooth decay, and prolific agents in systemic infection as well. Over a hundred distinct varieties of bacterial formations, it is said, are found in the human mouth, many of which have been not only discovered, but isolated.

I am aware that this may seem a formidable array, but it is not overdrawn as a presentation of the states of infection connected with untreated natural teeth; and incredible as it may appear, these conditions are found not only in the lower classes, but they exist in general mouth conditions in high and low born, the fastidious and the boor, king and peasant.

When does mouth infection, due to the presence of teeth, begin? It begins with the eruption of the deciduous set, and continues with increasing gravity through the period of shedding the temporary and the erupting of the permanent ones, and thence on so long as untreated natural teeth are retained in the mouth: the more critical period being that of childhood and early youth, this being the time when the mouth, under present regime, is wholly without intelligent care.

The object of prophylaxis treatment is to bring the human mouth into a state of asepsis and purity, and to permanently preserve the pericemental membrane in its integrity; the teeth, also, and all external tissues of the teeth. This done, and such wailings as Solomon's in his gloomy picture of old age, "The grinders shall cease because they are few," etc., and that that comes from many toothless ones today, shall no longer be heard.

It may seem presumption to suggest that Oral Prophylaxis is of magnitude to radically modify the present conception of dentistry, and to greatly change the present methods of practice. To advance a step farther and intimate that there is hidden away under the debris of the oral cavity

secrets of as great importance to the comfort and welfare of humanity as the discovery of vaccination by Jenner, will doubtless seem a magnification verging on absurdity; and yet we venture to predict that the future will disclose this as a truism.

The benefits of prophylaxis treatment are by no means mythical, nor are they uncertain; the feasibility, the practicability of the treatment have been fully demonstrated.

If asked to define this treatment I could not do it better than in the words of a former paper: It consists of enforced, radical and frequent change of environment for the teeth, and the perfect sanitation of all mouth conditions. Experience having demonstrated that the most careful and painstaking among patients are unable, with the agents commonly employed—the tooth-brush and dentifrices, tooth-pick and dental floss, soaps, so-called germicidal washes, and other agencies, to effect this,—the plan of forcible and frequently renewed sanitation by an experienced operator, has been instituted with most satisfactory results. In detail the process consists of careful and complete removal of all calcic deposits, inspissated secretions, bacterial plaques, and all accretions which gather on the surfaces of the teeth, and between them, especially at the gum margins; followed by thorough polishing of all tooth surfaces by hand methods (power polishers should never be used), not alone the more exposed labial and buccal surfaces, but the lingual, palatal and proximal surfaces as well, using for this orangewood points in suitable holders—porte-polishers—charged with finely ground pumice stone as a polishing material. Treated in this manner, the teeth are placed in the most favorable condition to prevent and repel septic deposits and accumulations, and not less to aid all efforts of the patient in the direction of sanitation and cleanliness.

In every instance in which this treatment has been instituted for the deciduous teeth, and in many cases of adults, also, there has been full immunity from decay, and the teeth have shown a marked change in structural composition. Alveolar development in children has apparently been stimulated and increased to meet the requirements of erupting teeth. The extreme and unnatural sensitiveness of the gums, attended with congestion with purple color, and tendency to bleed, has, in every instance, been fully overcome, and there has been quick return to the normal condition of low-grade sensibility, and to the natural pink tint of this tissue, with typical striations and beautiful festoons. It is also apparent that the teeth themselves, especially the dentin and enamel, probably through stimulation of the vital forces of the pulp, begin a surprising change for the better, a change which is first and specially noted in improved color and general appearance. Dull, opaque tooth substance, often loaded with offensive "old ivory" pigment, is transformed into clear, translucent tooth tissue, the teeth assuming the appearance of *living* organs, and having an impressive individuality.

For thirteen years the revelations and the benefits of this treatment

have been to me a constant source of surprise and delight, demonstrating with ever-increasing emphasis its absolute necessity in dentistry.

To maintain asepsis in the oral cavity and to arrest or prevent inflammatory processes in it, are the main objects of the treatment. Criticism has been made that I condemn "Tongue brushing." I certainly do condemn it, because of its inutility and its utter impracticability. I venture to say that no dentist ever tried tongue brushing twice on the same patient. No physician ever attempted it. The insincerity and duplicity of the man making the criticism is plainly evident in that all mention of the only way to mechanically relieve the tongue of its coatings of infection is, as I advocated in the same article, by mopping it off repeatedly, day after day, as I frequently do with masses of bibulous paper, saturated in Phenol Sodique or some other efficient germicide which can be used in the mouth. Zhongiva, a preparation far pleasanter to the patient than Phenol, may be used for this purpose.

Forceful and frequent removal of the stagnant irritants and toxins which perpetually recur on and between the teeth and along the gum margins is the one and only method of preventing or relieving this source of infection. Maintained at intervals of about a month, especially in the beginning, this treatment has been found to lessen and ultimately arrest all inflammations and all inflammatory exudations and to eradicate the unnatural and offensive odors from the breath. Whenever and wherever this system of treatment has found typical exemplification, whether in childhood, youth, middle life, or old age, most favorable and satisfactory results have universally followed. In each individual instance there has been marked improvement in all local conditions; marked retardation of decay, improvement in color and general appearance of the teeth, lessening of sensitiveness, external and internal, and apparent betterment of texture in dentin and enamel.

SILICATE CEMENTS

By Dr. Gustavus North, Cedar Rapids, Iowa

ARTIFICIAL enamel or chemical porcelain recently brought before the profession is certainly an ideal filling material for certain classes of cavities where there is no contouring or strain upon the filling.

The rubber dam must be applied in all cases for dryness is one of the essential points in manipulating silicate cements.

Cavities must be prepared so as to retain the filling and directions strictly followed in preparing and handling the material throughout.

Steel instruments must not come in contact with the material for they will destroy the texture and color of the filling.

The cement should be prepared according to instructions and packed into the cavity with ivory, bone or celluloid instruments or polished hickory

points and the surface of the filling finished with celluloid strips. Remove all surplus material and before crystallization has fully taken place, use celluloid strip slightly coated with cocoa butter and draw the strip back and forth over the filling a few times which will give a smooth polished surface similar to porcelain. If the color has been properly selected the filling will hardly be perceptible.

The filling must be kept absolutely dry for twenty to thirty minutes and then covered with paraffine. In removing the rubber dam be careful not to dislodge the paraffine.

Care must be taken not to incorporate the cocoa butter into the surface of the filling or it will deteriorate and become porous. If the instructions are ignored in the manipulation of silicate cements, failures are sure to result. Some operators have failures with gold fillings, but that is no fault of the gold and the same can be applied to silicate cements.

DENTAL FEES

By Dr. T. R. Buttrick, D. D. S., Detroit, Mich.

(Continued from page 375, May Summary)

E DUCATE your people to the necessity for proper dental services and enlighten them as to the reasons that you do thus and so. If your patients can be interested to know what constitutes first-class dental services, they will be content with nothing less and will be willing to pay first-class fees for the same.

I always try to make my prices reasonable, commensurable with the quality of the services performed, and there is always what seems to me, at least, a good reason for every charge that is entered upon my books, and as I have said before, it is arrived at chiefly from the amount of time that has been consumed in the work and not from what I think the patient will pay without "squealing!" I always wish the patient to feel at perfect liberty to ask about the fees charged, and the books, as far as his account is concerned, are open to his inspection.

I never hesitate to talk money matters to a doubtful patient. If a man is touchy about his credit, it is a pretty sure thing that it is not much good and it is better not to do the work at all than to make a bad account. When you allow a deadbeat to owe you an account, you have made an enemy who will never have a good word to say for you. If you require a deposit upon your work, tell your patient so, but do not resort to a sign to this effect, which, in my estimation, cheapens the look of any dental office.

Then see to it that your books are properly and accurately kept, whether by yourself or an assistant. Make a full journal entry of just what each operation consists in all its details and the time that it has taken. Then in posting the entry in your ledger, diagram the filling so that you can identify any piece of your work whenever it may come under your supervision again, and not mistake another's work for your own. Then

if anything that you have done goes wrong through any fault of yours, do not hesitate to *make good*. You do not have to guarantee your work, but do not be afraid to *stand behind it*.

Never "gouge" a patient, but do not be afraid to charge a good fee for a good operation. Remember that money is lost by *undercharging* as well as patients are lost by *over charging*! Many people prefer to pay a good price, feeling that they are getting better services by so doing. I well remember a certain lady for whom I made a full upper and lower denture not very long ago. I found that she had a difficult mouth to fit and I named her a good price for the work which I thought would cover my time, etc. I furthermore added that if they were not exactly right when completed that she could not have them at all! When I had finished the work and satisfied her, she told me that she had had in all *eight* different sets of teeth, all unsatisfactory, and that when I named my price, she thought I must understand this particular work for I had charged her more than any of the others.

Charge good fees, but be sure that you *earn* them. A man cannot do his best work unless well paid for it. It is an incentive to a man to do his best if he feels that he is to be well paid for it, while on the other hand, if a man feels that he is to be underpaid, it cannot fail to take some of the interest out of the work, notwithstanding the fact that he might love the work without regard to the fee to be earned.

Render your bills monthly and see to it that your patients do not impose upon you by making you wait too long for your money. I send out my bills the first of each month with a printed request at the top that they be paid by the 15th. They are rendered in the form of a statement for services from (blank date) to (blank date) and the amount. Then at the bottom of the statement is printed, "Fees charged are based upon time consumed. Itemized bill furnished upon application." Another thing I would urge upon you is never to rebate a bill when once rendered. It is a bad reputation to become known as a rebater and one that will come home to you again and again. One of the greatest sources of satisfaction to me is when a patient returns to me, having left me perhaps with the feeling that he has been overcharged, but perhaps, finding by sad experience that so-called cheap dentistry does not pay in the long run. I believe that it was Ruskin who said: "Beautiful forms and compositions are not made by chance, nor can they ever in any material be made at small expense. A composition for cheapness and not for excellence of workmanship is the most frequent and certain cause of rapid decay and entire destruction of arts and manufacture."

Now some of you may imagine from what I have said that I am advocating *high charges*, but such is not the case *per se*. I do not know of anything more disastrous to a young dentist's success than to gain the reputation of being an exorbitant charger. Let him rather seek to gain the reputation for excellence of work, for good judgment, for gentleness, for

consideration for his patients—in fact for all those many qualifications that go to make up a first-class dentist, and the patients will come to him in such numbers that they will practically determine what the amount of his fees shall be, as I have said before.

There are many qualities which contribute towards a dentist's success which, perhaps, strictly speaking, have no direct connection with dentistry, but I should like to point out a few of them before closing. We have all types of persons to meet and work for and it is necessary to be a good judge of human nature and to meet them with a certain amount of tact and diplomacy. There is a story of an Oriental monarch who had a dream and called in his sooth-sayer to interpret it for him. The man said, "Lord, it is a bad omen. You will see all your people die," and the King in his wrath had him straightway taken out and put to death. He then called in another sooth-sayer and told him his dream and demanded the interpretation of it. The man said, "Lord, you are most fortunate: you will outlive all your kin," and the King loaded him with money and honors. This merely serves to show how tact can often smooth over the telling of some disagreeable truth. Tact, then, is one of the cardinal requisites. Honesty is another essential. Be absolutely honest with your patient and endeavor to show him that you have a personal interest in his case: that what you propose doing for him is what you would wish done were the relations reversed. Explain to him what you propose doing and why. Do not deceive. Do not exaggerate. Do not mystify. Do not promise too much. Do not jump to a snap diagnosis and afterwards have to "hedge." Don't be after the patient's dollar only and hurry on to the next patient slighting the work. In operating, remember that the work is necessarily painful and be as gentle as possible. Sympathize with the patient when you must hurt and never laugh at him. Never lose your temper with a nervous patient or with children. Remember that confidence on the part of the patient is one of the essential requisites. When for any reason you feel this is withheld, the sooner you dismiss the patient the better. Do not confuse this type of people, however, with those of another sort who always want to get the full worth of their money, but are willing to pay a good price if they are made to understand the difference between good and bad work. In fact, you will find that few people will be content with indifferent services if you will only take the time and pains to educate them to demand something better.

Some dentists are continually croaking about the fact that our profession is looked down upon. I think if such is the case it is the fault of the dentists themselves. Every man will find his own proper level and his patients will regard him very much as he regards himself. Think highly of your profession and educate your people to the value of proper dental services and do not fear lest you shall be less highly respected than your medical brother. I care not how humble or exalted a man's calling may be in this world, if he will but do his full duty and respect himself, he will

gain all the respect that he is entitled to in the community in which he may live. I want to say that I have no patience with those who are ever harping on the topic of "Dentistry being a specialty of medicine." We are not and never have been and never, I hope, shall be so considered. We may be of collateral descent and have some, or even many, points in common, but a man may have the theoretical part of his training to perfection, in fact, he may be a graduated M. D., but if he has not mechanical skill and ability, he is a miserable failure as a dentist. We are essentially *mechanics* and the more skillful we are, the better dentists we make as a general proposition. In addition to this there is the artistic side of the question which enters largely into really high class dentistry. I do not wish to be considered to belittle the importance of the medical portion of our training, but without the other it is of little or no value. Our profession has risen from rather lowly origin, to be sure, until now it is big enough and broad enough to have specialties of its own. It is a noble calling and I am proud to be a dentist and prefer to stand alone as such, not wishing to hang onto the skirts of the medical profession for my standing and respectability.

DISCUSSION.

Dr. Winchester: I want to compliment Dr. Buttrick on the broad way in which he has taken up this question, very important to every dentist. It certainly is one of the annoying problems that we all have to deal with, and have to deal with **every day**. We may all be theoretically and practically good men in our profession, be able to make good fillings and good crowns and so on, and make a desperate failure when it comes to fees. I want to emphasize some of the especial points that the essayist has made in this way: He stated to us that it was a personal equation. That I believe is very true. It is up to each individual to use his best efforts and the most diplomacy in presenting the fee question to our patients in order to have the pleasantest relations with them and without the fees we could not very long be successful practitioners.

Another very important point that he brought out and that I wish to emphasize is the fact that money is lost by undercharges as well as patients by overcharges. I believe that perhaps we lose more money by the undercharging than the average man loses patients by overcharging, because if we deliver the goods the people forget the charge long before they will forget it if the work will fail.

Another point I want to congratulate Dr. Buttrick on is that he brought out the fact that time is the principal factor in charging. Our work is of such a variety that one can scarcely put down a schedule whereby they will charge a certain price for a certain operation performed and have that as a general price every day. I believe that the only true method of charging, as a general thing, is for time expended. I have no sympathy with Dr. Fullerton, I think it was, who says that a man who charges by the hour should be placed with the tin-pail brigade. I think that is very far-fetched, because we are, in a measure, salesmen. Our time is for sale. We make appointments with our patients for a certain length of time and we consider our time worth a certain price per hour, and I can see no other basis for charge for making an equitable price, except on the basis of the time expended. We are not like some specialists in surgery who perhaps lead people to believe that they saved their lives by some operation, who can charge \$100, or \$200, or \$300, or \$500 for an hour's work, in one case, and the next man who has more money, charge him more, and so on. We have these matters coming up all the time, and each individual wants to pay his fair share for your time.

I cannot agree with Dr. Buttrick in one thing, that we should charge one person

one price and another person a smaller fee, and do our best work with every person. I am criticised for this. I think it is physically impossible for a man to go on from day to day treating several of his patients each day for a nominal sum and giving them his best service. You know they say "money talks" and, while we are interested in our profession, interested in our patients and want to give them the very best services, it seems to me as though when I am getting what I think is a small fee for a piece of work, that it is a physical impossibility to drive myself to do just as fine a class of work as I can do where I have a larger fee. Now then, is that a business proposition anyway? A great many business men say that professional men, dentists and physicians, are not business men. Why is it? Is it because we have no basis of charge? Is it because we seem to ask one man to pay for his neighbor's work? One man who we think can pay a large fee, we charge a large fee, and another man who is unable to pay a large fee, we charge a small fee, and yet we give one the same class of work as the other. Is there anything legitimate in that? Is it equitable? I say "no," and I suppose we all do. Whether we give them all the same class of work or not, that is the problem. There is a point in regard to that that I use: I say to a business man, "It is worth more to you to have your teeth put in a proper condition than it is to a laborer on the street; the condition of your mouth in a business or social way, in every walk of life, is worth more to you to have it in a good condition than it is for the laboring man." This was with different classes of society. The higher up in life a man is, the more he comes in contact with the public, the greater is the value of his personal appearance. Personal appearance amounts to something, as a good looking mouth is a very good thing for anybody to have in a business way when you meet people. People are sometimes criticized because their teeth are bad and one or two are gone, and they look cheap, and they are not able to meet their fellowmen on the business basis that they would be if they were in better condition, and so they are worth more to the business or social man than they are to some men who do not come in contact with the public to that extent. We must have a business basis to work upon if we are to be recognized by men as business men, and it seems to me that unless we can present this in a way to appeal to our patients, that it is worth more to them to have their work done right than it is for somebody else, we cannot hope to ask them to pay the larger fee nor to be philanthropists and love their neighbor. A great many people who are abundantly able to pay any reasonable charge that we make do not feel comfortable in knowing that they are paying more than somebody else for the same class of work. It is not the amount, but it is the fact of being "held up," as they put it, and there is where the fact of our personality and our diplomacy comes in. It is the method of presenting that to our patients in a way they can understand that they are getting just as much for the money that they expend as somebody else is, in comparison with the amount that they spend.

I think one of the weakest points we have in our methods of stating a fee for patients is stating the amount of services rendered in an apologetic manner. Somebody asks you what you charge for a certain amount of time expended and you say, "Well, now, of course, that is quite expensive and you—well, it takes a good deal of time and, why, I shall charge you about so much." You have lost ground every moment; you had better tell them you don't know and let them go out at that than to talk like that, because you will probably have to rebate if you set a price. The only way to talk with the patient about prices is to state a price and state it as though you meant it—and mean it. There is no use quibbling about fees. If you think a crown is worth \$10, say it, and say it right out in church; if you think it is worth \$15 or \$20, say \$15 or \$20 right away, and get through with it, and let them absorb it as soon as they will, but don't, for heaven's sake, say, "why, I usually charge about so much, but, well, seeing it is you I will make it a little cheaper," because that puts you right down as a weakling; it is not a business proposition. You go to your groceryman or your butcher or your merchant and you ask him what

a certain piece of goods is worth and he says it is so much. Our prices are just as legitimate as the grocer's, and it is not necessary to apologize for them. I sometimes send my office girl out with bills, and I tell her there is no apology for them. That bill is so much, and if the parties say anything about it, don't apologize about it at all, because it is legitimate.

Of course, the only way, as the doctor has said in his paper, to increase our income, when a man has all the work he can do, is to charge more for his time. There is no reason in the world why we should not charge just as much as we can. As long as we can be occupied, it doesn't make any difference what we charge, if it is what we are worth. If we deliver the goods we are worth a certain price and they will pay it. If we cannot deliver the goods that are worth that much, it doesn't take them long to find it out. It needs a good deal of diplomacy in handling the public, and the sooner we learn to read human nature, the more successful any man will be in handling his practice. I always consider it a dangerous thing to give a definite price, in advance, on any amount of work. You always meet contingencies. After you have stated a certain price, they always forget that you have said that it might be more than that, and the fee is not always forthcoming when it is more, and it is most always more. I do not remember ever putting a price on a piece of work and having it come to less than I stated as the first price, and I would like to see a man who dare hold up his hand and say that he ever did see it come to less. Now, as professional men, we are not in competition, but we are co-workers, and you know that the fee that one man charges rather governs the fee that another man gets in the same class. I do not mean, gentlemen, that we at all are in the class of dental parlors, or anything like that, or that they control our prices; I think that the people who wish to come to us are educated pretty well along that line, and if they are not they get educated. I think that the cut-rate man is, in some ways, a benefit. I sometimes think that there is a pretty good field for him, and he has his place in the world and fills it to the benefit of a great many people. Sometimes, you know, a poor class of work is better than none; sometimes it is worse—but there are a great many people who cannot afford a large fee, and they must have some work done, and we cannot go on working for minimum fees. Now, in a business where a man is unable to pay for expensive goods he goes to a cheaper store and buys cheaper goods. Why not so in dentistry?

I will say that there are some cases where we could charge a reasonable, equitable fee without considering time; there are conditions where the benefits derived by the patients in a short time may be of such a nature that they are worth far more than your maximum charge would be for time expended; in the case of the treatment of pyorrhea, or in an extensive operation of crown work where we have the mouth in a deplorable condition to start with and we deliver to our patients a mouth that is a joy to them, and also to the operator. In those cases there is an opportunity and a right to charge for the benefits that the patient has derived at your hands, without consideration of time that we have spent on the work. We, as general practitioners, should have a better understanding of each other.

In localities where we have local societies we are closely in touch with each other, know what other men are doing, about what they are charging for their time, and we, perhaps, have less difficulty with the fee question than men do who are practicing more by themselves and who are not so closely associated with each other in practice. I do not mean by this that in these societies we ought to have any standard of prices that every one agrees to, or anything like that; I do not think we can do that, because each individual would have his own peculiar practice to charge for; he would have methods of his own; but you know if you do a piece of work for one person and your neighbor does something for another one of about the same class, that some day those two people will compare notes, and one of the questions is, "what did you pay for it?" "I paid so much; what did you pay for yours?" "I paid a certain price." Now, the

work is about the same, one looks just as good as the other and from every point of appearance it is just as good, and we will grant that it is, but one man charged a smaller fee than the other, and one man feels that he got "held up."

Now, there are conditions in a great many cases where men are criticized for charging high fees when the men themselves are above criticism; it is not a radical criticism.

Now, there is another thing, it seems to me, in a smaller city—while I do not know as it makes any difference about the size of the city or town,—a man who has been at the head of the profession in that city, a man in any place, a man who has once been considered one of the first-class men in the town; he has gone on with his work from year to year; he has accumulated property; he has practically, as I say, to use a slang phrase, gotten on "Easy Street"; all he cares for is to work for a few of his old patients, and he does not charge them very much—perhaps does not do as expensive work as somebody else would do. They get the idea that the men whom they do not know are charging larger fees than the man who has the reputation of being a first-class man and has held that reputation for years, and it is because the newer man is, perhaps, doing a different class of work and is charging more for it; it takes more time. That is one of the difficulties that we will come in contact with under such conditions. The man who doesn't care to work very much and has only a few patients that keep him partially busy as much time as he wants to spend, will have a tendency to bring disrepute on the younger and newer man, unconsciously, and yet he will do it, and it places the younger man in a hard position. Those are some of the difficulties that we have to overcome with fees.

We must have the confidence of our patients; without confidence, it is pretty up-hill work. There is just one other thing that we must do: Let us have clean offices; get apparatus to work with; have it look as though, when a man comes into our offices for work, we have something to work with; that we are able to give him something for his money—and then charge a good fee.

Dr. Thompson: I have in mind taking up and citing some of the instances of the prices charged for work, take repair plate work. We see prices, one tooth so much, say \$3.50; two teeth \$5, and so on until we get to a full plate, which would be \$10 or \$12. We all know that it is just as hard to make a plate with one tooth as it is with five teeth. Time is the factor in all things. The average dentist works about five hours a day. If he is living in the city and paying \$25 a month for a house and \$25 a month for his office, \$25 or \$30 a month grocery bill, he has to keep a girl in his house that costs him about \$200 a year or more, and he has to keep a girl in his office, \$200 more, and when he comes to figure up he has not got much for scallops on the last end of his salary if he puts in silver fillings at 50 cents and it takes him two hours to do it. I got an eye opener when I went into the office of a friend of mine, who said to me, "I do not see where there is going to be any money in this business for me; I have been working 2½ hours on a filling for which I get 50 cents." I nearly dropped dead. He said, "That is all I can get; that is all everybody else charges." I said, "You want to go around and find out something." As a beginner he was a slow workman, and he had not been taken into the confidence of his teachers enough to know that he should not do those things; he was working for college prices, that is all there was to it.

I believe that we are, regardless of what Dr. Winchester said, bound by custom to too great a degree; we care too much for what the other fellow across the street says. John Jones and Mrs. Smith and everybody else don't know anything about the things we have to contend with, and I believe in one thing the essayist said, "If you are going to tell a person a price, tell it quick and just nail that idea into his head."

Dr. Bottrick is long on the Golden Rule, I know that. He read a paper some two years ago for the dental society on Professional Ethics, and this is the other paper boiled down and stretched out. The business necessity part of his paper struck me

pretty well. There is one item that comes into the life of every dentist, not so much now as it used to, that is the setting of a Logan crown. It used to make me green with envy when I heard of one or two men in town who had nerve enough to charge \$10 for Logan crowns. I have not set a Logan crown for six or seven years, but the mere fact that the prevailing price of Logan crowns is \$5 per, it makes no difference what foundations you put them on, drove me into the work of making porcelain crowns such as some of you have seen exhibited at different times, and there are grades of porcelain crowns that can be made and put on and give just as much service, for different prices, as any other thing that we have to deal with, and some porcelain crowns can be made, fitted, and properly adjusted in shorter time than others, and I believe if we have samples of the work right at our hand where we can show the patients what they are going to get, they are willing to pay the difference in price.

Dr. Reeves, Chicago, Ill.: I simply wish to say one or two things: One is that your patient will not appreciate your services at any greater value than you appreciate it yourself, no matter where you are located or under what circumstances you do the work; also, that it is advisable to have a minimum fee for less than which you never do work, and for just as much more as you feel the patient is able to pay you and you will not get too much for the service rendered. Another thing I would advise is to cut out all 50 cent charges; if you are going to charge \$1.50 for an operation, make it \$2; if you were going to charge \$2.50, make it \$3; make it all in dollars and they will add up easier and count up better.

Dr. Wood: I want to say that I believe Dr. Buttrick and Dr. Winchester and Dr. Thompson are the most practical, philosophical and proper men we have, in charges and everything else, and yet I think somewhat as Dr. Reeves, that while Dr. Buttrick gets down to brass tacks in his business, and all these men that have spoken, yet the only proper thing to charge for is time. I believe that is the ideal practice. Dr. Winchester has also said, when he got through with emphasizing the importance of the fact that the only way to charge was for time, there were those cases where we had to charge for effect; that is, we put a mouth in good shape after it had been in very bad shape, and we were privileged to charge a nice price; that is, we were privileged to charge, possibly, as Dr. Reeves said, all the patient will stand in some cases.

Dr. Reeves: Not all they will stand, but all you think your services are worth to them.

Dr. Wood: We must find out and have business ability to begin with to know what our services are worth, and know in our own mind, and, when we know that, the matter of charge is as light as feather; it does not bother us a particle. We settle in our own mind, "this is worth so much," and it is worth so much to the patient. I think where you sum it up, we all have to handle our charges according to our practice, and no one can charge absolutely for time. I believe we should charge according to results in a great measure; if we get the highest results in our own mind we can in justice to ourselves and to our patients charge a different price than as though we get only mediocre results, and none of us always get the same results we expect when we start out. I think that is a point worth thinking about and that is strictly justice to the patient and to the operator.

Now I want to say a word about the rich and the poor. I have patients who are in moderate circumstances, for whom I have worked for many years. I feel like doing them the very best that I know how. They have stuck to me; they had confidence in me; they believed in my ability to do their work and I have many of those for whom I work at a very much less figure, at the minimum price, as Dr. Reeves says, and I do for them just as good work as I do for the one who pays the maximum price, and I believe when the whole thing is summed up that it will be considered right and just. I want to say, and not in a boasting spirit at all, I have never allowed the charges of another man to influence my charges. I have tried to set a value on my time and my services, regardless of what it is worth to me. I do not think that we

ought to allow the other man's charges to influence us, and practically because no two men on earth work alike.

Dr. Valette, Indiana: Things are governed differently. It seems to me that it would be almost impossible to charge by the hour for all work; it would seem all right for operative work, but when it comes to crown and bridge work and artificial dentures, that would be impossible. I find that it does better to charge by the hour in operative work. Take the condition we have with cheaper dentures; I would like to cite one case: I had a patient for whom I had been doing work for ten years; she came into my office and asked me if I still charged \$10 for crowns. I said, "yes." She said, "my sister went to a dentist nearby and had one put on for \$5," and wanted to know if a crown was not a crown. I did not care to argue on the matter, so told her that she had better go home and examine the crown I had put on ten years ago, and look at her sister's crown put on a week before, and if mine did not look the best she had better go to the other dentist and get her work done. The result was that she came back and had my crown put on.

Dr. Bowles: I can say what governs my prices. There is a moral effect or an immoral effect of doing cheap work for a low price. I think every man should charge enough so that he can do good work; that governs me always. If I cannot do a piece of work well for a certain price, I must charge more, no matter who it is for.

Dr. Howlett: Dr. Thompson said that if you have a price, say it, and say it quick, and Dr. Winchester says to say fifteen or twenty, and have it over with. If you say fifteen or twenty are they going to give you fifteen or twenty—mostly fifteen! *We* are not business men.

Dr. Buttrick: I do not believe I have much to add to what has been said. I think the subject is very much like that of politics or religion; I could talk here all night and could not change your opinion. I do not want to. I knew I could not. I gave you what I considered a fair working basis. It seems to me that, as these different men have said, things are worth different prices, but I know that what you have got to figure on, largely, is the amount of time expended. If you take a mouth in bad condition and put it into a good condition, of course it is worth more. However, if you have not kept track of your time, then you have no basis on which to charge. If you can say that each entry in your journal shows exactly what you did, the amount of time spent, and that the time spent is the reason for your charges, they are willing to pay it, as they know that the charges are based on more than guess-work.

The proposition of Dr. Winchester that you should have different qualities of work for your different prices is altogether wrong. I do not think I shall attempt to defend my position that one man is entitled to better prices than another, but I believe it is true. Some of my work is done absolutely gratis. I regard my clinic patients as well as I do my richer patients, and they get the same quality of work. I do not believe in doing a cheaper quality of work because a person cannot pay the price. I might put in an amalgam filling in one mouth where I would put in gold in another, but the quality of the amalgam filling would be just as good as it was possible for me to make it. Take the price for the crowns. One gentleman said he made a price of \$10. That to me is ridiculous. The crown is all right, but when you crown an abscessed tooth it takes you days to put it in condition, and to pay a price of ten dollars for that crown, and then charge ten dollars for the tooth that requires simply devitalization is preposterous—one is worth three or four times as much as the other. The inconsistencies of our charges! I think that if a plate is any good it requires more mechanical skill than almost any other work that we can do, and to imagine that a man can make a plate that will fit for ten dollars, and to articulate it, cannot be possible. If your time is worth anything, you cannot construct a plate for ten dollars and make it right. Another thing,—the man who works 21½ hours for a 50 cent amalgam filling; I think, probably, that was the fault of his college professors, for he was doing it at the college rates. I do not believe in all the time I was in college any one

said a thing about fees; they thought this is a subject that you have got to thrash out for yourselves. However, I believe that time is the chief factor that enters into the price; that the artist who paints three pictures and charges a thousand dollars for one and \$50 for another, I do not believe you can compare that with dentistry. Whenever an operation of mine does not suit me, a patient gets a moderate price put on it. Of course I generalized. If I could specialize I would be quoted, perhaps, as being an advocate of this or that, which I do not care to be. Each man has to make his own prices which he is going to work on, and the price I make to my patients has nothing to do with the price you make to yours. I did not state that time was the only factor; I said it was the chief factor. There are other factors—the artistic effect and the material.

THE USE OF PORCELAIN IN DENTISTRY

By **Chalmers J. Lyons, D. D. S., Jackson, Mich.**

(Continued from page 370, May Summary)

WHAT has been said regarding the nature of the material, the acquirement and development of skill and the training of the eye to detect the different hues and tones of color, is as essential in the use of porcelain work in crown or bridge as in inlay work.

There is no material we now have for executing crown work which so nearly approaches the ideal as does porcelain, one which so nearly imitates the conditions of nature not only from a cosmetic standpoint, but from a physiological standpoint as well, for it possesses no quality which is injurious to the mucous membrane or to the general health of the patient.

Porcelain is a mineral substance and possesses the characteristics of friability and as strength is a requirement of equal importance with the esthetic in crown work, this must be taken into account in using this material in the construction of a crown. The use of porcelain in crown work in its present form with the facilities available, makes it possible for the experienced and skillful operator to achieve results which combine both the requirements of beauty and strength.

In view of the friable nature of the material the necessary degree of strength is not obtained only by the presence of a sufficient thickness or bulk of material to insure an adequate degree of resistance to stress during the process of mastication.

While failures will occur in any line of work, they need not occur in porcelain crown work, on account of the friability of the material, if the operator is judicious in the application and has a clear conception of the structural requirements.

In porcelain crown work the metallic structure constitutes the foundation and it should be made just as strong and rigid as it is possible to make it as the strength of the piece is dependent to a great degree upon the foundation.

The line of union or the joints of the section of the metallic parts should be closely fitted so as to insure perfect contact so as to require the minimum

amount of solder in uniting. Pure gold or gold and platinum solder should be used to unite the parts for gold alloyed with the baser metals would oxidize in the process of fusing the porcelain and the gases would cause porosity of the piece.

The application of porcelain to the construction of crowns is contraindicated in all cases where a sufficient thickness of porcelain body cannot be obtained on account of the close occlusion of the opposing teeth to insure an adequate degree of strength that will resist the stress of mastication. As this condition is not frequently presented except in molars, porcelain may be said to be indicated for crown work on the ten anterior teeth, and in cases where there is sufficient room between the opposing molars to obtain a sufficient bulk of porcelain, this material may be used there with good advantage.

While porcelain may be used in the ten anterior teeth principally for its aesthetic and hygienic value, it is not usually necessary from the aesthetic standpoint that it be indicated on the molars but from the hygienic standpoint it has an inestimable value for it presents a smooth highly polished surface which is more easily kept clean than gold, because it is not affected by the chemical action of the secretions of the mouth, and food products will not cling to it or become deposited upon it.

Dr. Goslee in his book on the "Principles and Practice of Crowning Teeth," says: "In the application of porcelain crown construction, the highest possible advantages can be derived only from a careful observation of the requirements, combined with a skillful execution of the details in the preparation of the root, the construction and adaptation of the cap and attachment of the facing, and the manipulation of the body itself.

"When the conditions of occlusion are, or may be made favorable, and when these details of construction have been executed with skill, a porcelain crown possesses adequate strength to meet the requirements of all average and typical cases, and the possible integrity in such work often exceeds that of any other style of construction."

The possible integrity of life of any crown is dependent to a great degree upon the preparation of the root to receive it. For some years it has been my practice to use the plate and dowel instead of the cap and dowel in all of my porcelain crowns on the six anterior teeth. The root is prepared by beveling the root both labially and lingually from a central point or from the root canal, so that the plate which is to form the base of the crown straddles the exposed end.

The labial bevel should extend from the center of the pulp canal to a point sufficiently far beneath the gum to allow for the thickness of the plate. The lingual bevel should extend to the gum line. As the stress of mastication is upward and outward on the six anterior teeth, the lingual bevel will act as a support for the entire root when stress is brought to bear on it, thus preventing fracture of the root.

When the root is prepared in this manner the normal physiological conditions of the gum tissues are not disturbed and in using porcelain to con-

struct the crown, the hygienic and aesthetic advantages are almost ideal in replacing a lost natural tooth by an artificial substitute.

In constructing the porcelain crown, after the desired root preparation has been secured a piece of platinum, gauge about 36, should be cut a trifle larger than necessary, and annealed and burnished to a perfect adaptation with the surface of the root. After securing the proper adaptation of the plate, the canal should be prepared for the reception of the dowel which should be of iridio platinum, a trifle longer than the length of the crown when completed. The plate and dowel should now be united with pure gold or gold and platinum solder and plate again reburnished to the root.

A Consolidated facing of the desired mould and shade is now placed in position and soldered to the dowel with pure gold and platinum solder, and when united, the solder evaporated by means of high heat either with an oxyhydrogen blow-pipe or by means of the electric furnace. In placing the facing in position a space of about one millimeter in width should be left between the plates and the facing in order to permit of reburnishing the platinum after the first fusing of the porcelain body.

In applying the porcelain body on the lingual surface care must be taken not to build over the lingual plate until after the first fusing of the porcelain body and the reburnishing of the platinum, as the shrinkage of the porcelain will have a tendency to draw the platinum away from its original adaptation.

When using the Consolidated facing, Consolidated porcelain body should be used for when the final fusing is completed the crown will be one homogeneous mass, and will be much stronger than when the facing and the porcelain body have different fusing points.

In the construction of the bicuspid porcelain crown, I use a half band or a band on the lingual half. The stress in mastication in these teeth is upward and laterally and the half band supports the root in the lateral stress, the half band being made of iridio platinum. The principles of constructing these crowns are much the same as for the anterior crowns only on account of there being no physical union between porcelain and platinum: it is not only desirable to make as much space for the porcelain which is to form the entire lingual surface of the crown as possible, but it is necessary to provide some means of supporting it against any possible line of cleavage in order to preclude subsequent fracturing from the stress of mastication. This may be accomplished by attaching a small, round platinum pin to the center of the lingual portion of the cap, or by using the surplus end of the lingual dowel when two dowels are used. Care must always be used in obtaining the minimum amount of metal in the construction of a porcelain crown for it is the bulk of the porcelain body that has to be depended upon to furnish the adequate strength.

Molar crowns in porcelain may be made in a similar manner to the bicuspid or the entire crown may be built up with porcelain body without a facing.

Dr. F. W. Howlett, of Jackson, Mich., has recently brought out a method for articulating porcelain whereby one may get an absolutely perfect articulation by its use in building up molar crowns. The method is rather a long one and the time is too limited tonight to describe it in all of its details, so I will only give an outline of it. It consists in taking a bite in Stents compound, a very hard modeling compound, and after carving up the cusp a matrix is made of the occluding surface in which porcelain is fused to form the cusp of the crown. A porcelain base is built on the abutment of the crown, and then the porcelain cusp is set on the base in the right relation with the opposing teeth and waxed in position with a small amount of casting wax. Porcelain body is then applied between the cusp and base and fused. The crown being completed by several subsequent bakings.

Porcelain is surely indicated in the restoration of the peg laterals by means of the all-porcelain jacket crown. This, no doubt, represents the highest achievement in porcelain work, and if it had no other use in dentistry it would be a material which would receive the benedictions of many thankful people.

The use of porcelain in bridge work I believe has a limited field on account of the friable nature of the material.

It is only indicated in those cases where there has been a great amount of absorption, and where there is a good opportunity to get a large bulk of material and is probably indicated for removable bridge work more than for fixed bridges and particularly so in large bridges.

In the construction of a porcelain bridge the foundation or frame work necessarily has to be made very strong, and in order to get strength a large amount of metal has to be used which would detract from the strength which might be imparted to it by the porcelain. On account of the hygienic advantages of porcelain, it is lamentable that its mechanical advantages are not such that will justify its more practical application in bridge work.

The use of porcelain in the continuous gum work, no doubt, represents the highest achievement in prosthetic dentistry. From a hygienic standpoint it stands without a peer. However, it has its disadvantages in the fact that it requires a manipulative skill which can only be obtained by long experience and a thorough knowledge of the details in that particular line of work, and which the large majority of operators do not have the opportunity to procure.

In conclusion let me say that in the practice of dentistry we should never let our enthusiasm overrule our better judgment; we should not be extremists in any one branch. Porcelain has a field which at the present time cannot be occupied by any other material. Gold has its place and on account of its durability will ever stand in the first ranks as a filling material and also as a material for the construction of crowns and bridges. Let us combine these two great materials in our practice and when the hygienic and aesthetic requirements predominate let us use porcelain, but when the requirement of strength is a predominant feature let us not hesi-

tate to use gold, thereby uniting all that is best in the two materials and rendering to our patients the best possible service at our command.

DISCUSSION.

Dr. J. M. Thompson: Dr. Lyons outlines the very nice comparison between the art of selecting colors and the art of music. Now, if it was as easy for us to select colors as it is for one to go to a piano and strike a given chord or different tone, the selecting of colors would simply be a matter of practice.

We take the porcelains that are given us and are designated by different shades, and we mix them together, and we expect certain results, and perhaps some of our results are as unpleasant to us as a discordant violin being played by a six year old in the next flat. The different filling qualifications, as outlined by Dr. Miller, have probably set a standard for all, and it is no doubt owing to the friability of porcelain that it has fallen somewhat into disuse and the gold inlay has taken its place to quite an extent. Dr. Reeves said, and I think I have heard Dr. Raymond make the same statement in one paper, and I think I have made the same myself on one or two occasions, that the use of porcelain was limited only by the skill of the operator. I still believe it. Think it over.

There is no question that the fusing of porcelain is one of the most important points in the use of this material. It is to be lamented that we have not at the present time facings made purposely for porcelain crown work, that is, a facing that is a little under-done and of a given color. Facings, partly fused, would greatly aid us in the results that we seek to obtain, because in the use of the "Consolidated" porcelain, as Dr. Lyons has said, the crown becomes a homogeneous mass, and there is great danger of over-fusing, especially if grinding has been done upon the facing to give it some special shape required for an individual case. However, that is not of so great importance as it would be if the material was of a poorer quality. I have often said that this particular material was almost "fool proof" and that you could not spoil it, but you can.

The bubbles that Dr. Lyons mentioned are very often apparent when the utmost care has been exercised.

The point he brings out about foundation body and the use of it are excellent points indeed. I have found great satisfaction in using a white body furnished by the Consolidated Company. I took the idea from the white furnished by Brewster, which is of very little use where he had hoped it would be, in labial cavities, on account of its extreme whiteness and the thinness of the amount of material we use for such inlays. With this white foundation body I believe that the shadow problem is as well overcome as with any other material that we can use. In the lower fusing materials such as Jenkins' and Brewster's, almost all these materials are fluxed with glass. Now, the presence of flint glass in any porcelain is a detriment to it, on account of the percentage of lead that is in all glass preparations, and in over-fusing this lead becomes formed in little globules in the porcelain, and if it is near the surface it is dissolved or washed out and we have a porous or roughened condition of the porcelain which is so unsightly in many pieces of work.

Dr. Lyons speaks of the dowel and cap. The use of 36 gauge platinum as a cap and the iridio-platinum dowel, is one of the oldest crown foundations we have ever used in making the porcelain crown. That is the way Dr. Downey adopted his facings which he then filled in with the Downey body. Some very creditable work was done with that material.

I believe that the time has come when operative dentistry will be subservient to the demands of oral prophylaxis, and in that respect I believe that we are going to do away with a great many root bands. As far as the band is concerned in its application to bicuspsids, I think it is practically of little use, because these crowns are made just as strong without it.

With the post set in the root, and thoroughly anchored with cement, we have an opportunity to see how much porcelain we are going to have between the post and the opposing tooth. If we make the cap and the tooth fit over the post, or adjust our facing, and then build in at the back, giving ourselves plenty of room on the lingual surface, I think we have all the strength necessary for a strong and useful bicuspid crown. In fact, I do not know that I have ever had but one split, and that was done before it was set.

As I have progressed in the use of porcelain in crown work, I am gradually getting to the exclusive use of 1-1000 platinum and removing it at the completion of the crown. I am sure they are better than with a 36 gauge platinum left in the crown. In using the 36 gauge platinum, Dr. Lyons says let it extend a little over the root. It is absolutely necessary that we bring the porcelain up to the outlines of the root itself, and in many cases you will find that if you leave this platinum on and hanging over the edge of the root you will have some irritation, and the gum will move away from it in a few months. It is almost impossible to remove 36 or 40 gauge platinum from the crown after having the work completed, and have your crown fit as well as it would if you left it right in place.

It is just as easy to set the post in the root as to make it in the crown, because it is well proven that in the proportion as you bake metal into porcelain you weaken it just that much, and as far as putting in retentions on the lingual surface of the cap to increase the strength is concerned, while it makes a better union to the cap, I do not think it adds to the strength.

Dr. H. C. Raymond: The point the essayist makes about fusing is especially a good one. I think much porcelain work spoiled by improper fusing—by that I mean that the colors are lost. If it is unglazed its refractive power is lost, and if it is over-glazed, it does not look natural with the labial teeth. One point usually lost sight of is that there is quite a difference in the gloss of the enamel of different teeth. The enamel of some teeth has little glaze compared with that of others, and that fact should be noted where work is being done.

I am a strong advocate of the layer method, because I find I can get better results from that than from mixing colors together. In that way you can fuse one or more colors together, a gentle tap brings them together, and you get a harmonious blending that you cannot get by mixing them any other way. Of course, those who have not tried it think it is very difficult, but it is not so difficult as you might imagine.

Quite frequently I am asked if my fillings stay in, and many seem to have difficulty with that problem still. I think this is largely caused by some teachings of our earlier writers of five or six years ago, who created the impression that really all that was necessary was to cement the inlay into the cavity, paying no attention to retentive cavity formation. You must have a properly formed retentive cavity. I think many fillings come out because the patient is merely asked to close the mouth in direct occlusion, and are not asked to go through the motions of mastication, which would indicate adverse contact.

For a time I used nothing but a Consolidated body for my crowns, but I do not now think it is necessary. In the first place, when you are running some of these bodies through the furnace, 2,550 degrees all the time, you are going to shorten the life of your furnace. I find that the lower fusing bodies, 2,250 or 2,300 degrees, will answer every purpose, and I believe experiments have shown them just as strong as high fusing bodies. I doubt if White's body has any lead in it at all, because it has a beautiful clear and translucent appearance, and it seems to blend harmoniously with the high fusing body as much as any of the others.

I have not used bands on crowns in the anterior teeth for several years, and I do not really see where a half band is needed on the bicuspid crowns, if the root is properly shaped. I think you get just as strong a crown in porcelain as if banded. I do not see any advantage in allowing the platinum to extend over the edge of the root.

I think if we allow the porcelain to come directly in contact with the root and absolutely flush with it, the gum tissue will come over that better and it is subject to less irritation. Some might say that the contact of the porcelain against the end of the root might cause it to break. I do not see how it could if it properly fits the root and attention is given to occlusion.

I do not think there is as much porcelain used as there should be now. I believe that too many porcelain furnaces are put away on the back shelf, and this is largely due to following improper principles, and also to those who have tried it, thinking it was too simple a process, and after seeing done some beautiful piece of work at a clinic, some men have gone to their office thinking they could go to work and get the same results, forgetting how much time has been put into learning to make such beautiful fillings.

I still stick to the statement I once made, and which Dr. Thompson repeated to-night, that I think the application of porcelain is going to be limited by the ability of the operator only, but I have modified my use of it somewhat, whereas I did use porcelain in molar cavities, because I considered it from a hygienic point the best thing to have, it is not always as good as it might be. I still use it in nearly all bicuspsids, and the edges don't break away if the walls of the cavity are properly prepared, but I think the gold inlay has properly taken its place in many molar teeth.

Dr. C. H. Oakman: I enjoyed the very excellent paper of Dr. Lyons, and would say that it showed a good deal of original thought. I could not help but feel pleased at his suggestion that after the matrix was prepared, you should obtain all the retention possible in the cavity. Dr. Reeves, you will remember, tabooed the idea of any retaining form, but advocated cavities on the principle of a saucer-shaped preparation, if you please, no undercuts whatever, these were not necessary. Our fillings came out, quite to our displeasure, frequently. We met one another on the street and asked: "Are you doing much porcelain work?" Answer, "Yes, doing lots of it."

Question: "Fillings sticking?"

Answer: "No."

Of course we had to own up to our friends—we did not tell our patients that. Then by etching the inlay, our fillings began to stay better. Then we thought we would take a chance and get retention in the cavity by the use of small fine burs, and they stayed still better, and when Dr. Lyons spoke of that it pleased me very much, because I really think that it is along the right line, and I know that every man and woman here that is doing porcelain work, if he follows that principle, is getting better results than ever before. How many times would our inlays come out with very little cement adherent to the inlay, because the part of the inlay fitting against the tooth was as smooth as the proximal facing of the inlay. I think the acid etching has been a saving factor.

Dr. Thompson spoke of a point which I would like to emphasize, in regard to using a very fine platinum to burnish over the roots. I know Dr. Thompson has done that for a number of years with excellent results, and I have made a number of crowns with a half band or two-thirds band, making the band in the usual way and cutting it out afterwards and bringing the cap up to the level of the root; after the post was in place, took it to the furnace and put it on porcelain and brought it back, finding that it did not fit and so had to take it off; it was necessary to burnish the platinum over the root again. By using a very fine platinum about a thousand fine, the manipulation is necessarily very exacting, but the results obtained are of the best, I think.

Porcelain for molars I never use; however, I have seen some very excellent work done with it, but I have always fought shy of it for the mere reason that I do not think it is strong enough. I have seen a number of them broken in the mouth, but that is not the only reason. If the crown is on the anterior teeth, frequently the labial aspect of the tooth is broken off because there is only a slight amount of porcelain

covering the band, and it is a frequent occurrence with many, I think, that the porcelain breaks at the point of the thinnest margin.

I notice our friend Dr. Thompson has spoken of a double pin going into both roots of the bicuspid. I think he has success with them, but I have never used it and stuck to the one pin. I want to thank Dr. Lyons for coming here and giving us this excellent paper tonight.

Dr. MacDonald: I was thinking, as I sat here, how subdued we all were when discussing the porcelain of today; we are not as bombastic in our utterances as we were five or six years ago.

I am glad Dr. Raymond modified that statement of his; I am sorry Dr. Thompson could not do so also in regard to the use of porcelain, as depending altogether on his ability to use it as to where he should use it. You could use almost any other substance in the same way. What we strive to do is to produce an efficient filling as well as an aesthetic one, and I have yet to see porcelain inlays where the margin is not properly prepared that have stood the test of time in the occluded surface molars and bicuspid. I think Dr. Lyons could not have struck a happier medium in his paper all the way through. He was not an extremist, and I believe he has put porcelain in its proper place in practice.

There is one method in which I use porcelain a great deal and in which I think a great many of us could use it to good advantage, and that is in connection with our Davis crowns. It is very difficult sometimes to get crowns that are really the proper shape or the right shade—they might be just a little bit too narrow, although a very good shade. I very frequently use porcelain after I have fitted a crown somewhat, and modify the shade and change the shape; we can do that very easily, at the latter part of the operation, and can produce some very artistic results. Many dentists, especially the younger men, who are not enthusiastic in regard to inlays, claim that they do not get the fees that remunerate them, but I claim that if you use porcelain in no other operation than for that one thing, you would find that porcelain would pay in any practice.

I would like to have heard a little more discussion in regard to the staining of margins than we have heard tonight. Of course I can well realize that Dr. Lyons in his paper has had a great deal of trouble to furnish so many little details in regard to the making of inlays and making porcelain crowns, that he had not the time to dwell on these little matters, but the margin is really the thing that has concerned me most of all in many inlays. If we could get inlays to remain in place, we could construct them to look nice for a couple or three years, and the margin would begin to show itself, although the margin at the beginning looked very well; it was not altogether invisible, and yet certain patients have certain stains in the mouth that we simply cannot get rid of, and these stains will penetrate the slightest crevice and these slight crevices around our porcelain inlays after, say two or three years, certainly will show stains, and it has been my greatest bane in porcelain work to deal with those stains. I have not been able to do it successfully. I have tried in many ways, but they always come back. I do not find that in every case, but in enough cases to make that feature of porcelain work a very trying one.

Dr. J. M. Thompson: I was told once that a jest had no place in business matters. From the remarks of Dr. MacDonald I see that I have been misunderstood. I said that the old assertion that the use of porcelain was limited by the use of the operator, I still believe. Then I said, "Think it over." Now I have been called a sort of a dry joker in many instances, and that is one of my dry jokes.

I do not want to have the impression arise among the gentlemen here tonight that I am setting up myself before any other individual, as the greatest good in the line of porcelain work, because I do not believe there is any man in the profession of dentistry today who can put porcelain in every place and make it stand on stress.

I am putting in just as many gold inlays and am just as enthusiastic in every way over gold inlays as I am over porcelain, and I think I have just as many failures in connection with porcelain work as the average man, and if some of you have had the privilege of correcting them and putting in gold inlays in their stead, that is your gain, and I hope you will not misunderstand me in my little remark that I made, that I still believe that it applied everywhere, because I do not.

Dr. Lyons: I certainly want to express my deep appreciation for the kind manner in which you have received my paper tonight. I appreciate it very much indeed. I do not know that I can add anything to what has already been said. I am very glad indeed that Dr. Thompson has squared himself, because I firmly believe that it was statements of that kind which were made by eminent men a few years ago that has done a great deal to discredit porcelain. Men took up porcelain work believing those statements, and placed porcelain where it was not indicated and where it did not belong, and failed, and then, instead of placing the blame where it belonged they condemned the material. I firmly believe that porcelain has its place, and I also believe that the dentist's equipment is not complete unless he has a complete porcelain outfit, because there are places where porcelain is indicated and nothing else will take its place, that we have at the present time.

I was glad to hear Dr. Thompson bring out the fact of his using the Davis crown. I believe by its use and the Consolidated body we can produce results that we cannot get with any other method.

The point that Dr. Raymond emphasized in regard to the difference in the glaze of the natural teeth is well taken, and before beginning the operation for the porcelain inlay I believe we should study the glaze of that particular case, and then try to reproduce the glaze of the natural teeth on the inlay. Sometimes I have found that I could get better results in color by dulling the glaze a little by the cuttle fish disc, where the glaze of the natural teeth was dull. In order to get the proper colors and the proper refraction of light you have got to have the reflection on inlay exactly the same as on that of the natural tooth. Your colors may be all right, but if your reflection is not the same, the appearance will be changed.

In regard to the comment that Dr. MacDonald made as to staining of the margins, I have found that if you are particular in etching your inlay not to etch the margins, that the adaptation will be a little bit better. Cover the margins of the inlay with wax so as to prevent their etching. Your adaptation will be closer and there is not much tendency for the margins to take up stains.

Dr. G. C. Bowles: I regret that the contraction and expansion of porcelain has not been considered by the essayist. Dr. Clarence Graves, in the March *Cosmos*, had an admirable paper showing it was impossible to fuse porcelain around platinum without having an area of fractured porcelain, and several in speaking of Dr. Thompson's Davis crown and his thin platinum piece have said that they made a strong crown. It is strong because the expansion and contraction of the porcelain has not taken place to fracture the porcelain. Porcelain expands six points to platinum's fourteen. When the platinum expands, the porcelain is fused at the extreme points; as it is reheated over and over again, the edges not only thin and contract, but become more friable. In this paper, Dr. Graves says that of two facings in the same mouth, one having pins and one not having them, the one not having the pins is three times as strong as the one having them. After heating them to fusing degree he found that those not having pins when heated were three times as strong as those having pins. Every one doing porcelain work should carefully study the paper of Dr. Graves. I notice how the commercial houses take hold of these facts. Within a day or so I received a catalogue from the Twentieth Century Tooth people and note that they embody this principle in their advertisement.

Dr. Becker: Since last spring I have used the Davis crown and cast inlay method

of setting them to the root, especially on bicuspid. I like two pins there, and find that the wax does not only come down and fill the space alongside of the pin and fill the hollow in the root perfectly, but also comes up into the tooth around the pin that the Davis people furnish you, and takes it up so that there is very little cement needed and little grinding. A person certainly can afford to set these crowns for remunerative fees.

Dr. Oakman: A point occurred to me when Dr. MacDonald spoke about the margin. I wonder if every one boils out the acid from the inlay after etching it. I do not know but this might be a factor, or its porosity may have something to do with its discoloration.

THE DEFORMITY OF HARE LIP AND CLEFT PALATE: ITS INFLUENCE PHYSICALLY AND MENTALLY*

By Truman W. Brophy, M. D., D. D. S., Chicago, Ills.

THERE is no deformity more conspicuous or more distressing in its consequences than that of hare lip and cleft palate. Its influences physically and mentally, I believe, have not been studied in their many aspects with the care their importance calls for, with a view to giving relief to the patient, as well as to the parents. To say that a patient has hare lip or cleft palate is to convey to the mind of the experienced surgeon a very imperfect knowledge of the real condition. It would be almost impossible in a written communication to clearly describe the many forms and complications met with in a practice, which includes the treatment of hundreds of these patients.

The palate may be deformed by a separation only of the azygos uvula; the cleft extend a little into the soft palate; it may be a complete separation of the velum with a partial separation of the horizontal plate of the palate bones or the separation of the palate bones may be complete. The velum may be separated with partial separation of the palatal plates of the maxillary bones. There may be a complete separation of the palate bones and also of the palatal plates of the maxillary bones. The vomer may be attached to one side of the divided hard palate. There may be a complete separation of the hard and soft palate, the vomer not being attached to either side. The pre-maxillary bones, if the cleft is combined with single hare lip, may be separated from the maxillary bone, probably on the side on which the lip is un-united. If the hare lip be double, the pre-maxillary bones usually will be separated from the maxillary bones on both sides. If we have single hare lip, in about 85 per cent of the cases in which it appears, it is found on the left side. Not infrequently the pre-maxillary bones, together with the median part of the lip, when bilateral hare lip occurs, will protrude to a point far beyond the end of the nose. This deformity is the most conspicuous and in many instances, shocking

*Read before the Semi-Centennial Jubilee meeting, Indiana State Dental Society, 1908.

to those who witness it. Hare lip may involve only a little of the vermillion border, exhibiting a notch along the surface. It may extend a little higher or it may pass directly into the nose, leaving a wide separation with a broad flattened nostril.

When hare lip is single, the nose is almost invariably reflected to the opposite side and not in the median line of the face. In double hare lip we may have these separations partial or complete. If complete, the separation extends into the nostril, the nose is usually in the median line, nostril dilated and nose flattened. Hare lip in the median line is very rare. Only two cases, I believe, have been recorded in the literature of the subject. A case, the only one I have had in my practice, is awaiting an operation in the hospital at Chicago, a photograph of which I show you. Hare lip, single or double, may be unaccompanied by cleft palate. Cleft palate may not be associated with hare lip.

All children who have congenital cleft palate, with rare exceptions, have in the palate the normal amount of tissue, although it is not united in the median line: it is cleft. Nature does not fail to develop the necessary bone and soft parts to form a normal palate, but it does fail to bring the parts into apposition and unite them. Writers who have given a great deal of thought to the subject and who have dwelt at great length on its etiology, those who have proposed the more generous use of phosphatic food for the mother during the period of gestation, have been unconscious of the fact that the bones are not, as a rule, defective in structure nor incomplete in development. There is only failure of union.

A new born child having cleft palate usually weighs more at birth than he does a few weeks later. This is due to defective deglutition and nutrition. When the lip is not cleft, the deformity is sometimes overlooked for several days. The inexperienced will fail to make a proper examination of the child's mouth. It is observed, however, that food cannot be readily swallowed, but it frequently regurgitates through the nose and the child is consequently greatly distressed by its inability to receive proper nourishment. The anatomical changes in the function of the tissues which enter into the structure of the palate, have not received the care and consideration that their importance demands. Every child who has a cleft palate soon develops an abnormal pharynx. The membranes are more subject to irritation than when the palate is normal as they are more exposed to external irritation. Adenoid growths develop in the pharynx. There is marked pharyngitis, besides the influence that this condition creates in the pharynx, is also very detrimental to the sense of hearing.

When it is apparent that the muscles which have to do with the physiology of hearing are not in cleft palate patients, capable of normal action, it may be readily seen that we have here a factor which must be taken into consideration, when both speaking and hearing are to be perfected or improved. The principle muscle in this connection is the tensor palati which rises from the scaphoid fossa of the sphenoid bone, it passes around

the hamular process and is attached to the palate and to the pharyngeal orifice by the Eustachian tube. This muscle has a double function; first to make tension on the palate and second to dilate the pharyngeal opening of the Eustachian tube. In a patient whose palate is cleft there cannot be normal tension on this muscle, consequently it cannot dilate the Eustachian tube; therefore, the patient's hearing is defective, since the opening of this tube, as it is well known, is essential to perfect hearing. When the palate is united this muscle becomes extended and is able to perform its normal functions. In this connection I might state that the practice, which is still in effect among many surgeons, in dividing this muscle in making operations on the palate, almost invariably caused defective hearing.

A mass of cicatricial tissue is developed in the palate since it will not move with that physiological action that is necessary in a normal palate. I regard the division of this muscle in surgical procedure worse than useless, unnecessary and positively detrimental to the best interests of the patient. Another detriment to the well being of the patient is his inability to properly masticate his food, since it easily passes upward through the cleft into the nasal cavity and cannot be moved by the tongue and carried between the surfaces of the teeth with that certainty and ease with which normal patients perform this act. The difficulty of speech is too well known to require any time on my part to explain to an audience like this.

The Mental Impressions—not infrequently the statement is made that cleft palate patients are degenerates, but this is not substantiated by fact. Among those affected with cleft palate we have, as among other children, occasionally a degenerate. Some of the brightest young people I know are those upon whom I have operated for cleft palate when they were infants. In the line of my own experience with cleft palate children whose weight have not increased from the day of their birth, upon closure of the open vault, many soon materially increase in weight and become vigorous and healthy children. One of the most striking proofs of this statement has recently come to my notice in a twin child having cleft palate, whose parents declare that mentally he is brighter than his normally developed twin brother.

I have pointed out some of the physical ailments and anatomical defects which are found in cleft palates. Let us observe a child three years old who has not been operated upon. By this time the parents are deeply and sorrowfully impressed by the distressing consequences; they realize the child cannot talk so as to make himself understood. They are impressed with the great misfortune that has befallen them and that the child's future seems so unpromising. Parents often declare that its death would be to them preferable to having it grow up in this deformed condition. The effect of such deformity is not only felt by the parents and relatives, but the neighbors, acquaintances and friends and often people who are sensitive, are shocked and greatly distressed in witnessing these unfortunates when the deformity is of the most complicated type. Later the

child enters school: the defect in his speech attracts the attention of the other children and he is often the object of jest or ridicule. His failure to make himself understood is a cause of embarrassment to his teacher and such children are not infrequently withdrawn from school, as they cannot make good progress.

The child's embarrassment in the knowledge that he is deformed drives him, usually, into isolation. He refuses to associate with his fellows and his unfortunate condition prevents him from enjoying the companionship of others.

The mental distress to which cleft palate patients are subject is clearly expressed in the words of a young woman who was operated upon when twenty years of age. This young woman spoke before a large audience in the city of New York and demonstrated the correctness of her phonation. During her remarks she made use of these words: "I think it is a great mistake not to operate early. I would not have any one undergo what I have been through: the humiliation and mental anguish of childhood have been awful, and that is the reason why I believe the operation should be made in infancy."

Surely any intelligent parent would wish his child relieved of this deformity in early infancy rather than to delay operating and allow time to elapse and permit the child to reach the age of speech when defective phonation is a cause of grief and embarrassment to both parent and child.

DISCUSSION.

Dr. John H. Oliver, Indianapolis, Ind.: Having been for some eighteen years engaged in the teaching of anatomy and oral surgery in the Indiana Dental College, I do not feel wholly alone nor out of place in appearing before this learned body.

I was somewhat surprised at your presiding officer's modesty when he stated that "our distinguished visitor's reputation was limited to Illinois and Michigan." On the contrary, I can assure him that wherever modern surgical technic is practiced today, the wide world over, the name of Brophy is known and his methods respected.

I think it is unfortunate that dentistry should be so isolated from the parent trunk of medicine. The dentists do not mingle with doctors and surgeons enough and there are not enough of them members of the stomatological section of the American Medical Association.

Oral surgery should be done by dental surgeons. On this point I think we can all agree. The dentist, Morton, gave the world anesthesia and the dentist, Brophy, has revolutionized the surgery of the palate. I consider these the two greatest gifts of the specialty of dentistry to the medical profession.

I endorse, wholly, every word that the essayist has uttered and I would that I could more forcibly emphasize the statements of Dr. Brophy.

What greater curse to motherhood than a deformity like the one under discussion.

The causation of cleft palate and hare lip is still unknown but I think the doctor's ideas as to the etiology are along the right line. Where we have so stereotyped a deformity we must have a stereotyped cause.

I was a little surprised to learn that hare-lip, without cleft-palate, was so rare as I have seen quite a number of cases of this kind.

In closing, I wish strongly to advocate the necessity of early operative interference in these distressing deformities and to urge the dentists to affiliate more closely with the medical profession.

Dr. F. B. Morehead, Chicago, Ill.: While I appreciate that some phases of dental mouth work require special training and experience and require considerable technic, I believe that the dentist ought to be competent to treat every lesion in the human mouth.

Dr. Brophy, in his paper, makes a statement that mechanical causes are responsible for cleft palate. Now, that may be so, but take in this case for instance: In which we have a cleft of the soft palate, and in which the hard palate is perfect. In those cases in which we have a dissolution of the premaxillary bone, with a perfect hard palate; and in those cases in which we have a unilateral or bilateral hare lip, with a perfect palate. Certainly the mechanical force in that instance is not responsible. It is a difficult matter, in fact, nobody can state just what the etiological factor is in any deformity. Science has not discovered it; it is not known. The influence of impressions certainly do not account for it and yet not more than two or three weeks ago I had an illustration of that in my practice.

I positively believe that the operation should be done as early as possible; as early as is consistent with the health and strength of the patient. If this can be done before the child begins to talk he will learn to use the imperfect palate in a perfect manner. But if the child is talking it is exceedingly hard to change the palate and change the manner of speaking.

Dr. T. B. Hartzell, Minneapolis, Minn.: My thoughts in regard to the essay are exactly in line with those of Dr. Brophy and my limited experience bears testimony in this way. I surely appreciate the debt I owe to Dr. Brophy and I only want to have opportunity to state in his presence that I do owe that debt.

Dr. H. B. Tileston, Louisville, Ky.: I have had no experience in the surgical treatment of cleft palate, but it was my practice some years ago to make a mechanical appliance for the correction of cases of this character. I have examined a great many cases of cleft palate. It used to be considered by those who advocated the correction of the defect by mechanical means that a surgical operation was not successful in restoring speech because of the lack of tissue. The operation was performed so that the complete closure of the posterior nares could not be accomplished, consequently speech was not benefited much after the operation. But Dr. Brophy has dispelled that mistaken idea and has shown that there is an abundance of tissue and that the operations are successful in every way.

As to the effect of prenatal influences, as explained, and the cause of these influences, I have the history of one case of interest. The child had a defect of this kind and the father told me that the mother, during gestation, at just what period I can not say, visited a dentist and saw some casts of cleft palate cases which made a marked impression on her mind and the result was, apparently, that the child was marked in that way.

I have never noticed any degenerates in my association with these cases, and no marks of degeneracy. Probably that impression arises from the fact that children so marked are apt to think they are looked down upon as inferior in some way and that a child with such impediment in his speech will not attend school because he does not want to be laughed at and made sport of by the other pupils. As a consequence his education is apt to be neglected and he fails to develop. The theory that a defect in a vessel containing an organ implies a defect in the organ contained is a fallacy, at least in its application to cases of cleft palate. Such persons are not necessarily degenerate.

Mankind certainly owes a debt of gratitude to Dr. Brophy for the skill and ingenuity he has displayed in developing this beautiful operation that does away with the necessity of wearing any appliance whatever for the correction of the evils and inconveniences of cleft palate.

Dr. M. H. Fletcher, Cincinnati, Ohio: It gives me pleasure to be able to add more to the evidence we have of Dr. Brophy's skill. It does not fall to my lot to be

obliged to go into all of these cases, but it falls to my lot to note the solicitation of a number of our city surgeons, and one of the first things they ask me is what Brophy has done that is new. They expect me to know, and the name of the essayist is not only known in that particular line of surgery, but wherever high-class surgery is known.

Dr. J. G. Templeton, Pittsburg, Pa.: Mr. President, I have not had any experience on operating on congenital cleft palates, but I have had the pleasure or privilege of observing Dr. Brophy's operations, and I can only endorse what has been said in regard to his skill.

Dr. J. D. Patterson, Kansas City, Mo.: The only right I have to speak upon this subject is because I have made many obturators. I come in contact with a number of cases of that kind, some I have benefited a little, some considerable, and some not at all. This leads me to speak of the necessity of advising operating in early childhood, very early childhood. I think that is a duty we owe humanity because we do know of the difficulties of surmounting surgically the deformity and the comparative ease with which it is done in early childhood. Dr. Brophy has many patients where the operation has been most beautiful and perfect. He told me while seated here at my side of one fine looking young man, and he presented him before the stomatological section at Chicago last week, a most perfect result. The boy lives in Kansas City and I could tell you of the kind words the family say of him—why, they think more of Dr. Brophy than they do of their maker, and I don't blame them, because you and I who have been in touch with these cases know what a terrible misfortune it is.

Many years ago I did not believe that any surgical operation was advisable in these cases, and I want to say that I have changed my mind.

Dr. H. T. Smith, Cincinnati, Ohio: There is another phase of this subject that attracted attention in Chicago yesterday, and when the discussion is closed by Dr. Brophy I should like to have his opinion upon the matter. In the operation of opening the median suture for the purpose of gaining space in the upper alveolar ridge in regulating teeth, the question arose as to the age at which the limitations for this operation should be placed.

There would seem to be some doubt as to just when this suture was closed finally by osseous deposition. We should like to have Dr. Brophy's opinion on this point.

Dr. T. W. Brophy, Chicago, Ill.: (Closing the discussion). I am willing to retain my seat, Mr. President, and let the discussion of the subject remain closed, but since some questions have been asked, it seems necessary for me to speak.

I was very glad to hear the distinguished surgeon who opened the discussion express his views, and particularly to hear him speak of the influence of heredity as a cause of this deformity, as it is the cause of many congenital deformities, and I particularly desire to express to him my appreciation of his very kind words and his approval of what I have done in this line of work.

Regarding his remarks upon the application of force, I am not quite certain that he can not trace the cause of the conditions that he mentioned, such as club foot, etc., to muscular contraction or to position in embryo; I am not certain that the deformity he mentioned is not due to the position of the fetus and that force has been exerted to change the condition of the muscles and ligaments. It is true, as he said, that there is a great field for work along this line. I believe that force is responsible to a considerable extent for congenital deformities. This we should name as well as the one under discussion at this time.

As to prenatal impressions, I have very little faith in them, even in the instances related by Dr. Moorehead of a woman who was told that if she went to a dentist she might have the misfortune of another woman who had a child born with this defect. At the fourth month the process of ossification is well advanced; at the fifth month the ends of the bones, when the physiological process is normal, are complete; at the fifth month you are able to trace a suture which forms between the premaxillary bones

and the maxillary bones, but the union of the maxillary bones proper and the bilateral plates of the palate bones is completed. There is a union and I do not see how it would be possible for any impression made upon the mind to separate a suture. I do not believe it ever occurred.

As to heredity,—like produces like. The changes noted, changes from the normal in the parent, I think it quite reasonable to assume may occur in the child. My friend, Dr. Patterson, said that I had patients in the general section of stomatology. They were in the general section of surgery of the American Medical Association. There were something like eighteen hundred men present, and in this connection I might say that one young woman came upon the platform upon whom I operated when she was ten days old. I failed to close the entire palate, leaving a space about the size of the point of a lead pencil. Now, she speaks as distinctly as any one speaks. In her family there were eight children, four of whom had congenital cleft palates. The parents did not have cleft palates, but a grand-parent on each side of the family had a cleft palate. I operated successfully on two sisters and a brother.

I must say that the remarks made by the gentlemen who have spoken today of my work have been most gratifying, but I do not want any one to believe that I never make a mistake or a failure for I do. If I could go on without making failures I would be a great deal happier.

DENTAL SCIENCE AND LITERATURE

By G. C. Bowles, D. D. S., Chairman Com., Detroit, Mich.

(Continued from page 397, May Summary)

OF great interest to those administering nitrous oxid is a paper in the November '08 *Cosmos*, by Dr. C. K. Teter, entitled "Nitrous Oxid and Oxygen; Its Possibilities as a General Anesthetic." He says: "It, (nitrous oxid), is not only an anesthetic but is an asphyxiant as well. If we can remove the latter quality we have an ideal anesthetic agent, as nitrous oxid is practically non-toxic and there is no agent known that is capable of producing narcosis with so little constitutional disturbance."

Because of this asphyxial element, Dr. Teter does not regard the administration of nitrous oxid, safe as it is, wholly without its element of danger. In this view he is confirmed by a most interesting observation he was enabled to make on the physical appearance of the brain, a portion of the skull having been removed while the patient was under the influence of nitrous oxid alone and in combination with oxygen. To quote, "It is interesting as well as instructive to observe the effect of nitrous oxid and oxygen upon the brain and to note the difference when nitrous oxid is administered with and without oxygen. When the nitrous oxid is administered alone we find that as soon as the asphyxial element begins to enter into the procedure, the brain loses its natural pinkish color and turns more or less gradually to a dark purple. If the administration be continued without air or oxygen, it will take on an appearance resembling that of stagnant blood. As this discoloration progresses there is a dilatation of the brain, and the greater the discoloration, the greater the dilatation, so that it will protrude through an opening in the skull. One can imagine what this would

mean to a patient with a myosthenic heart, or one with apopleptic tendency. This accounts for the headache sometimes complained of after the administration of an anesthetic. The condition of the brain is altogether different when a patient is anesthetized with oxygen in combination with nitrous oxid. On increasing the oxygen to almost one-half of the mixture, it was but a few seconds, not more than nine or ten, until the brain assumed its natural color and returned to its normal position. Citing one case from among six hundred, in which Dr. Teter administered nitrous oxid and oxygen, for major surgical operations, he says, "The patient was under the influence of nitrous oxid and oxygen, without one breath of air, for nearly two hours and forty-eight minutes. Nearly six hundred gallons of nitrous oxid and eighty gallons of oxygen were used. Upon the completion of the operation, the anesthetic was withdrawn and the patient regained all her mental faculties within one minute. There was very little shock from the procedure, nausea and other post-anesthetic complications were entirely absent. Nitrous oxid and oxygen may now be safely employed to render all dental operations painless and the prediction is made by Dr. Teter that "the day is approaching when it will be absolutely necessary for us to do painless dentistry."

The intimate relationship of the anterior superior dental nerve with the nasal mucous membrane satisfactorily explains the anesthesia produced in the anterior teeth by the insertion of a tampon of cotton saturated in cocaine in the nasal fossa. "The technique of anesthesia of the upper incisors by the method under discussion, is very simple, consisting in the introduction into the anterior region of the nasal fossa, of a tampon of absorbent cotton of the size and shape of an ordinary almond, saturated with a 1-10 per cent solution of cocaine, to which a small proportion of adrenalin-chlorid may be added, if desired. The cotton tampon should be placed beyond the cutaneous border of the nostril in close proximity to the anterior edge of the inferior turbinal." While the tampon is in the nose the patient should sit erect to avoid the possibility of some of the solution escaping through the posterior nares and gaining the deeper structures. As a rule anesthesia is not evident before twenty minutes after insertion of the tampon and it reaches its greatest intensity in about thirty minutes. Occasionally the incisors and canine of the opposite side are also anesthetized. *Cosmos*, February, '08, p. 180.

On page 1215 of November *Cosmos*, '07, reference is made to "electric sleep," a name given by Professor Ledue, of Nantes, to a condition comparable to chloroform narcosis, produced by the action on the brain of an intermittent current of electricity of low tension, six volts, generated by the means of a source of continuous current and of a specially constructed form of interrupter. This "sleep," in which the subject lies without any power of sensation or voluntary motion, may be maintained for hours. "A remarkable fact is that when the flow of current is interrupted, the subject awakes immediately, without any of the after effects that follow chloroform

narcosis." Let us trust that this "electric sleep" is not a pipe dream and that it may work a revolution in present methods of painless (?) dentistry, equal to that wrought by the cast inlay for the operation of gold filling.

Some valuable and practical information on the subject of anesthetics has been brought together in a paper by Henry H. Boom, M. D., *Items of Interest*, October, '07. Cocaine is particularly well considered.

While orthodontia has become a specialty and is passing more and more out of the hands of the general practitioner, a campaign of education is required to instill a few of the fundamental precepts of orthodontia into the working habit of that same general practitioner as much of the specialist's time is employed in correcting the deformities the general practitioner should have averted. The constant recurrence of the word "mutilation" in the papers and discussions on this subject is not to our credit. The class of people who are willing to pay for the correction of irregularities, as a rule, have a family dentist and would be willing to pay him for the proper care of their children's teeth did he, himself, appreciate the necessity and inform the parents of it, says Dr. Elliot R. Carpenter, *Dental Review*, April, '08. "I believe fully fifty per cent of mal-occlusion is due to the extraction of the first permanent molar after patients attain twelve years of age."

In a paper read before the National Dental Association and appearing in the February, '08, *Cosmos*, Dr. Marcus L. Ward shows that the best dental alloys, those carefully compounded after the Black formula: Silver, 65 to 68 per cent; tin, 26 to 28 per cent; copper, 3 to 5 per cent; zinc, 1 to 2½ per cent, both before and after amalgamation possessed very unstable qualities. When freshly cut, such an alloy requires a larger per cent of the mercury to put it into solution, or to make a workable plastic mass, its points of expansion are greater and its setting is quicker than after it has stood for some time and becomes progressively annealed. A number of fillings ¼ inch in diameter and ⅛ inch high made from five parts of such a freshly cut alloy to seven parts of mercury, thoroughly amalgamated, and excess of mercury expressed, developed in forty-two days their maximum crushing strength of four hundred and ninety-seven pounds. This crushing resistance gradually decreased until in less than two years it was one hundred and eighty-seven pounds. "But, in addition to the changes that take place in the movement that accompany the setting, the percentage of mercury and the time required to set the mass, the annealing produced by the alloy standing around causes a decided decline in strength. Alloys which resist five hundred pounds when new will often become so much annealed in one year that one hundred and fifty to two hundred pounds is the maximum strength which can be developed." Alloys kept at office temperature for a longer period than one year should not be used.

The papers referred to in this report will indicate the trend of current dental literature, better than any analysis the writer might make; they will also refute, it is believed, the contention of Dr. Talbot, that dentistry

is going backward. If we set out to find the common place, the impractical, the rantings of the blind would be leaders of the blind, we can find them everywhere, within as well as without the domain of dentistry. Dentistry has much to forget, very much to learn, but it is moving forward, and we have no call to be ashamed of its progress.

From the nature of the subject and from its having been written at odd moments over a period of several months, this paper is necessarily rambling and disjointed, but it contains a rich harvest for discussion and I trust you will avail yourselves of the opportunity and discuss it to the limit.

DISCUSSION.

Dr. L. P. Bethel, Columbus, Ohio: While, as the essayist says, but little of the material appearing in our dental magazines the past year is original, yet new applications of old ideas have added to the progress of dentistry.

"Dental literature," says the essayist, "has two main currents,—the scientific, arising largely from the unappreciated, unrewarded labors of the few specially equipped explorers after the origin and cause of things; and the practical, descriptive of methods, technic and appliances." He adds that he believes the average practitioner gives too little heed to the theoretical or scientific phase of his profession, and in this I agree with the writer. Too many of our dentists are practicing empirically. The scientific should be the foundation for the practical to make it of greatest worth. As one instance we might cite what the experimental studies and research of Black on the character of tooth structure and its disintegration, and its application to operative dentistry, have done for our operative procedures. And such experiments as recently made by Dr. Price will help to make our inlay operations more exact. J. S. Wallace, in an article entitled: "Science and Empiricism in Orthodontia," published in the *Dental Record*, April, 1908, points out the necessity of more exact knowledge of the etiology of irregularities before we can claim orthodontia as a science, and adds: "When we consider how intimately the etiology of irregularities is associated with the art of regulating the teeth, we must feel inclined to think that those who vaunt their methods while ignoring etiology, are surely trying to sell mechanical appliances rather than advance the science of orthodontia."

In the *British Dental Journal*, January 19, '07, appeared an article entitled: "The Parallelogram and Polygon of Forces in Articular Equilibrium of the Teeth," by Dr. C. Gordon. He considers the conditions needed for articular equilibrium of the teeth in the dental arches, the pathological consequences of the breach of this equilibrium, the operative method for maintaining or restoring it, and its applications to operative dentistry and to dental prosthesis. A study of the direction of stress of our crowns, bridges and other restorations is of the greatest importance and should be applied more thoroughly to dental operations.

In his various articles, "A Brief Review of the Chemistry of Pulp Decomposition, with a Rational Treatment for This Condition and Its Sequelae," *Dental Review*, November, 1907; "A Consideration of General Therapeutics as Applied to Dentistry," *Review*, August, 1907; "Practical Dental Therapeutics," *Dental Summary*, September, 1907, and other essays, Dr. J. P. Buckley has given the profession many advanced ideas as to scientific treatment of diseased conditions of the teeth and mouth.

In an article in the *Dental Summary* of March, 1908, Dr. E. Ballard Lodge cites many cases of insanity, melancholia, etc. due to impacted teeth, principally third molars.

Now all of these articles show the necessity of something besides the simple, mechanical operation to obtain the best results. The mechanical or so called practical operation must be built on the scientific, to make it complete. The two are inseparable,

and the dentist who makes the practical application of the scientific will do much more good to humanity and to dentistry.

Among other articles than those referred to by the essayist or in this discussion, that have appeared during the past year and which are worthy of at least a careful perusal, may be mentioned one by Dr. C. L. Alexander in *Dental Review*, June, 1907, entitled "Methods in Prosthesis Which Developed from the Gold Inlay." An article by Dr. A. W. Harlan, *Dental Review*, March, 1907, on "Observations on Retention of Pulpless Teeth in the Jaws with Indications for Their Removal." A contribution to the *Cosmos*, February, 1907, by Dr. A. Hopewell Smith, entitled "A Study of the Vascular Lesions of the Dental Pulp, Their Complications and Clinical Significance." An article in *Items of Interest*, April, 1908, by Dr. I. N. Broomell on the "Genesis of the Blood Supply to the Teeth," and various articles on inspection of the teeth of the school children and dental instruction in the public schools, one of the best of which is the paper read before this society last year by Dr. George Zederbaum, entitled "Propagandism of Dental Education in Our Schools."

One does not realize the actual progress that is being made in dentistry each year unless he goes carefully over the articles appearing in the dental periodicals, then he is convinced that dentistry is moving, but not "backwards" as claimed by Dr. Talbot.

Dr. N. S. Hoff, Ann Arbor, Mich.: I do not think there has ever been a year in my experience when there has been so much written that was of real value as during the past year and so much extending over such a broad field of discussion as we have had, for a great many years, appearing in the Dental Society work and in our periodic literature, which is largely the output of the dental societies on some one particular subject. It has seemed to run to one thing one year, and another thing another year, but it has not been so during the past year; as you will know from the review made by Dr. Bowles and the addition made by Dr. Bethel, we have covered almost the entire subject. We have, it is true, during the past year, not done much on the subject of dental education, which is always a great theme and one thus far written about a great deal, yet during the past year that subject has seemed to have been quiet. We have had little or nothing to do with it, but I want to bear my testimony to the value of the literary output of the past year. The one subject that has interested me and has claimed my interest more than all the others during the year has been the subject of the treatment of that disease which we all have been accustomed to think was incurable; a disease known by so many names and for which we have no name; a disease which I like to call, better than by any other name, Riggs' disease. We have, it seems to me, established the one fact in connection with this disease more definitely than we have in connection with any other thing thus far commented upon. We have established, by clinical work and demonstration, the fundamental fact in connection with that disease that it is a curable disease.

Another matter that has come into our literature and into our Society and professional work during the past year, is that of the gold inlay problem. It seems to me that this is one of the most interesting problems we have encountered, and that we are most surely likely to accept it as a standard method of practice, and it is not only coming very largely into use throughout the profession generally as a method of modifying our treatment of the diseased teeth, but the principle upon which it is based is being utilized in connection with other prosthetic work,—the construction of crown and bridge work; the construction of cast metal plates. The prospect which we have of utilizing this method, or at least the principle upon which the method is based, in connection with the construction of artificial dentures of suitable materials such as the fusible alloys of aluminum, is wonderful, and it promises that in the very near future we shall abandon a very great many of our present methods of constructing artificial dentures because we will find that with this method we are able not only to construct these dentures with greater accuracy but with equal mechanical advantage.

ADVANTAGES AND BENEFITS OF ASSOCIATIONS.

By Harry B. Holmes, D. D. S., Louisville, Ky.

BENEFICIAL TO YOUNG MEN.

I am a teacher in a dental college and in offering any suggestions to our graduates, I beg of them not to neglect associating themselves with some society if it be in their power. If he does not he will not develop professionally as he should. He also fails in his duty, not only to his patients but to himself as well. He deserves the criticism of his Alma Mater when he ignores the benefits to be derived from meeting and mingling with men whose vocation in life is the same as his.

He must keep awake and be up and doing or else will fall into a rut and flounder helplessly until he sinks into utter oblivion from his professional world.

Commencement is but the beginning, and we should meet at least annually to prosecute the studies begun at that time. The influence of the association has so advanced that it occupies a position second only to the college in advancing the standing of the dental profession. If there were more general attendance upon associations there would be fewer advertisements for post-graduate courses and fewer men feeling the need of such. To the writer it seems that in dentistry more than in the other professions do we need the benefits of associations. We are, to a greater or less extent shut-ins, coming but little in contact with the outer world in general; the very nature of our work tends to intellectual narrowness and contracted mental capacity. Thus we need some influence to counteract the tendency which the attention to the small details in our profession has to reduce our mental caliber.

ISOLATED DENTISTS.

We fully realize the fact that many dentists practice in country towns and are more or less isolated from other practitioners, and where society organizations are not convenient. In such a state of affairs local societies should be formed embracing several adjoining counties, and meetings held quarterly in order that they may not lose by neglecting society matters. In these days of interurban facilities we think some such plan could be worked out, so that few, if any, need be altogether deprived of Society advantages. Older societies should establish other organizations and lend them a helping hand until they felt that they themselves were trustworthy.

BENEFIT US FRATEERNALLY.

Dental societies, aside from their educational advantages, do much to give good feeling and to broaden the character of its members. Association stimulates ambition, develops one intellectually and makes one more companionable. This is true professionally as well as socially.

A MEANS OF GROWTH.

The Dental Society as an aid to growth is of paramount importance.

This is an axiom. Look for the most distinguished men in the profession and you will find them prominent workers in Dental Societies. Whether they began early or late in their professional careers, they evidently felt the need of some stimulus and naturally turned to the society to find it. When once enlisted they began to put forth greater effort in order to keep in touch with their fellows who they were possibly surprised to find knew fully as much, yes, a little more, than themselves. It was never more necessary than now for a dentist to be constantly on the alert. Our profession is making rapid strides, and it behooves us to keep awake and use our every energy in order to keep abreast of the times.

It takes a better dentist now to succeed than it did ten years ago, and the next decade will bring many new developments. We cannot afford to lag behind the procession by being satisfied to cling to methods now in vogue, let them be ever so satisfactory. Life has but one meaning and that is growth. Growth is the product of one force and that is association.

ASSOCIATIONS MAKE US MORE PROFESSIONAL.

It is a noble thing to be a good dentist, and nobler still to be a professional man *and* a good dentist. We may be members of a profession and not be professional.

I believe our associations with each other in our State Associations and local Societies have helped to make us more professional. I believe it to be the duty of every reputable dentist to become a member of at least his State Society and help support the institution that is helping him and his profession. Certainly, the act of joining an association does not make him a good dentist (although the tendency is certainly for his betterment) yet every dentist should desire, and we may say does desire, to become a member of a society. We do not join the church to make us Christians, but because we are Christians and seek the fellowship of the people of God to assist us in working out our salvation. This is absolutely necessary or there could be no church. The same may be said of the benefits to be derived from, and the maintenance of dental organizations. It is a duty. None is excused. If one man excuses himself, because of timidity of taking part, or because there is some man holding office of whom he does not approve, then may we all with equal right demand that we, too, be excused from the obligations which we assumed.

Young men, graduates of 1908, you should fall into line and connect yourselves with this army of fellow practitioners, who are, with their concerted effort, giving, not only their time, but energy, and money if need be, for the improvement of any phase of the profession. You have no right to do as you please in this matter. Organization is necessary. Suppose, when Mr. McKinley, our martyred President, made a call for soldiers, they had responded, but at the time reserved the right to do as they pleased—have their own tent, eat where they pleased, sleep where they pleased, fight when they pleased—what could have been accomplished? Suppose they had said, "I am willing to fight for my country, I love the cause, I

honor the flag. I am a patriot, but I will recognize no authority. I'll have no commander over me. I shall be a law unto myself. What would have been the result? Why, no victory could have been won and they would likely have killed as many of their own men as they would have killed of the enemy. The same applies, in a sense, to the matter of joining Dental Associations. "In union there is strength,"—"United we stand, divided we fall." Then, if you respect the calling which you have selected for your life work, there is but one consistent thing to do—join the associations, become an organized force for the accomplishment of better things in dentistry, fall in line, recognize the authority of those in command and forward march. And may we not forget that the greatest intellectual and social enjoyment known to man comes from the rubbing of mind against mind and the free interchange of thought and experience.

DISCUSSION.

Dr. J. R. Callahan, Cincinnati, O.: The Benefits of Association is a subject that presents a number of difficulties to the essayist. The benefits are certainly numerous enough and easy to demonstrate, but how are we to reach the men who most need to be converted? It is like the Sunday morning sermon, the men who need to be told of their evil ways, and convinced of the certainty of their eternal residence in that hottest of all popular resorts, are playing golf, fishing or doing some equally unorthodox thing, so the essayist with this subject has to essay to those already saved.

Dr. Holmes has given us a most excellent paper full of good points with which we all have to agree, and agreeing so thoroughly with his exposition of the subject, I propose to pay him that most sincere compliment, imitation, insofar as the, to me, principal phase or division of his subject—"Society necessary to man's development," quoting the Doctor and other authorities without further apologies.

The individual does not act alone, although each conscious thinking being wills to do and act as if he had control of his life and could do as best pleased him. He is ever acting on the assumption of the freedom of the will with an apparent determination to accomplish his ends regardless of the thoughts and feelings of his fellows.

This ever present, persistent, assertive ego of man is constantly reminding him that he, alone, is to be consulted about his course of action. But this conscious ego deceives himself or merely pretends to that which is only part truth, for no man really acts independent of the influences of his fellowmen. Everywhere there is a social life setting limitations and influencing individual action. In government, in religion, in industry and in professions they combine and organize for specific purposes so that no man lives to himself.

It is this unity of effort that makes society. And society, as the essayist has well said, is the genial element wherein man's nature first lives and grows. The solitary man were but a small portion of himself and must continue forever folded-in, stunted and only half alive. One can almost imagine the voice of an average dentist exclaiming, "Is it I, Lord?" and the Lord answered, "Thou hast said."

We have here today before us a striking example of hundreds of dentists virtually shutting themselves in, locking the door, barring their windows, seeming to fear that a ray of light may penetrate and prove the utter darkness of their daily practice.

At this moment there are at least ten thousand dentists within a half day's travel of Indianapolis; every one of these ten thousand men know, down in their hearts, that they should be here at this meeting to partake of the feast that has been prepared by a few generous, self-sacrificing members of the Indiana State Society, yet not ten per

cent. will even *think* of closing their offices for three days to revel in the best and most advanced ideas of their chosen profession, not even when the most choice bits of professional information are put up in the most attractive packages and handed to these stay-at-homes on a golden platter will they so much as put out a hand to secure that which is offered.

Now, why do we, the minority, the ten per cent., attend these meetings? Close our offices that are the busiest in the land, pack our grips and consider it a privilege to attend this meeting, for instance? The reasons come surging up in our minds in such numbers and with such insistence that we scarcely know to which to give voice. "Why are we here?" Because we cannot afford to miss it. We cannot afford to miss it from a professional point of view. We cannot afford to miss it from a social point of view. We cannot afford to miss it from an educational point of view. For many other reasons we cannot afford to miss, but let us confine ourselves to these three reasons.

From a professional standpoint:—Attendance upon Dental Societies fills us with an increased respect for the dignity of our calling. After hearing scientific papers, after coming in contact with men of advanced attainments, we realize there is something to do in dentistry beside the filling of teeth. We learn to have greater respect for our calling, consequently greater respect for ourselves.

Every man of real experience will admit that genuine respect is one of the most potent means of getting along in life. There are large numbers of dentists who seem to overlook the dignity of our profession. These are the men who are so often guilty of unprofessional advertising, overlooking the fact that, to a degree, man inherits himself.

John Bright said, "I am today what I am because I was what I was last year. And next year I will be what I will be because I am now what I am."

We cannot afford to miss the society meetings from a social point of view because one of man's greatest duties to himself is the selection and the cultivation of his friends. The thought of having friends comes to us like benison and benediction, and gives professional life an entirely different aspect. Friendship is almost a religion. The recognition in your life of the fact that to have friends you must be one is religion, a divine gift.

Attendance upon and activity in the work of Dental Associations has brought to me some of the most attractive, lasting and valuable friendships of my life.

When I look back a few years and contemplate the list of dental leaders that societies have made it possible for me to be on more or less intimate terms with—such men as Doctors Allport, Alkinson, Flagg, Miller, Taft, Watt, Keely, Rehwinkel, Webb, Bonwill, these and other great lights that have passed on—how these great men took me by the hand and counseled me and made crooked things straight for me; and above all, how they took me to their hearts, it makes my soul go out to them in grateful remembrance. The Dental Association made this possible, and today, when I pack my grip and start to a meeting, there flits through my mind a cloud of faces—faces of loved confreres—Jack and Bill, Ed, John and a score of others, all of whom stand on the topmost pinnacle of professional attainments.

It seems that steam cars travel slowly, so anxious am I to greet them. The Dental Association has made this possible for even me. Is it any wonder that I exclaim, "Great are the Benefits of Dental Associations?" Is it any wonder that when you meet a fellow dentist, a good fellow, a fair dentist, yet a stay-at-home, a shut-in as the essayist intimates, who has never shared in the joys and benefits of such friendships, you feel justified in saying, "Poor fellows! There is food and drink all about you, but you know it not?"

We cannot afford to miss these meetings, from an educational point of view. After ten years of practice any dentist will admit that when he left college his education was only begun, or, in other words, he had as much to learn during his first ten years of practice as he did learn at college.

Observation will prove to you that it is after several years of practice that men begin to attend society meetings. There may be several reasons, but I take it that it requires the years of experience to knock the fumes of youthful conceit out of one's head. Then we naturally turn to the society to help us out,—that is, about ten per cent. of the profession do. And what is the result? We find, first of all, that all the men who may come under the head of leaders, men whom the profession looks upon as the leaders of the Dental world, are these in the society meetings putting forth their utmost efforts to learn more, listening attentively to papers, watching closely at the clinics,—nothing escapes them, and above all, they think and talk on every topic that is of the least interest to them.

It has been well said that men learn to think by thinking and to talk by talking. In explaining a theme to another it becomes luminous to ourselves. But a large per cent. in our and every other profession, refuse to make an effort to think, therefore, are not likely to try to talk. This is what the French call *mutisme* (*mytism*), or unwillingness to speak.

Whatever people may say about silence being golden, it is historically certain that gold likes talk and has at all times preferred flowing into the coffers of much-talking persons, so says a great English writer.

However that may be there are few advices more sound than the one we should give the young dentist as to the poor value of constant *mutisme*, and if asked to give the most valuable advice in the shortest space of time, I should say, "My young friends, give up your useless unwillingness to speak, dare to commit yourselves. What one learns from books and from solitary thinking is precious little. That is valuable which one learns from living intercourse with fellow practitioners. This intercourse is impossible without talking." The only reason that I can see for the tongue-tied condition in so many dentists is the fact that the very nature of his daily work compels him to be practically alone most of the time, yet to me nothing can be more absolutely certain than the old experience that one can never be a success unless one dares to commit oneself a thousand times. Then, and then only, are we taking advantage of the great educational opportunities offered us by organized dental societies.

I am not prepared to say that if a man of deficient brain development or of careless, shiftless habits, a ne'er do well, should attend, ever so faithfully, every dental society meeting that it would make a good practitioner of him. Professor Hadley of Yale College, in reply to a question, said that to send a fool to college will not make a wise man of him, but will make a different kind of a fool.

So there is hope for us all and it should be impressed upon us, every one, that we should get the society habit early in life and continue in the habit so long as we are able, ever remembering that "I am today what I am because I was what I was last year and next year I will be what I will be because I am now what I am."

Dr. N. S. Hoff, Ann Arbor, Mich.: I hesitate to undertake to discuss a paper so thoroughly written and presented as that to which we have just listened, and especially since listening to the comment made by the speaker who has just preceded me. This is a very large field, however; there are lots of things that could be said that I shall not take your time to say, because they have been said, but there is one thing about this matter that particularly pleases me and that is an idea that came to me from reading the paper by the essayist, in which he says that it is in association work that a man finds himself. Now, there is or used to be, an opinion among some of our religious people that to find one's self and get near to the Creator one had to go into solitude in order to study and examine one's self carefully and closely, but it is this idea that we find ourselves in society work that struck me as being one of the most vital features that we could take away from this meeting. We all know, especially those of us who are in the position of teachers in the colleges, or as students in dental colleges, that most people have a very meager conception of what it means to be a professional man. It is

the constant effort and endeavor of every conscientious teacher in a school to try to develop the professional man in the student before him. One of our ablest editors, at least one of the best known dental editors in this country, when I asked him recently what it was that kept him at his work strenuously providing copy for his journal, month after month, year after year, said it certainly was not the salary, but it was the thought that he was doing something to instil into the mind of the profession in general professional ideas. It is the thought or the ideal which the teacher, the preacher, the editor, the essayist, and the speaker who has preceded me, have had in mind; they want their ideals developed and crystalized, so to speak, into professionalism. What is it to be a professional man? Our students come to us with the idea—and I generally ask every student when he first presents himself, why he studies dentistry; the answer in a large majority of cases is that it is a respectable profession, and it looks to him as if in it there was a good opportunity to make a living. That is all very well, and we do not want to discredit a man for entertaining any such ideas, but that is not the noblest thought a man could have; it is not the real goal, and it is not the professional one. The ideal that we ought to have is that which will give to us a true spirit of professionalism, and as I have thought on this subject I have wondered how long it would take a man who sits down in his own office and makes no effort to develop a professional spirit and have professional ideas to develop them if he never comes in contact with other professional men. How long would it take him to develop a high ideal in this way? In other words, how long would it take a man to find himself? It is true that some men will develop much more rapidly than others, but I believe that it is in this associated effort that most of us very much sooner come to find ourselves than in any other way. I believe that this is the true feeling and experience which comes from the associating together of dentists. My experience has been that there are a few men in the profession who are expected to take up most of the time discussing the Society papers so that there seems to be little opportunity for discussion by diffident and younger men, and opportunity for them to find themselves by participating in the discussions is lost. As Dr. Callahan has said, this is evidenced in reading the proceedings of any of our dental societies. Most men hesitate, not because they do not know, or have good thoughts, but because they are modest—may I say that they are overly modest, or feel that they cannot instruct any one—so they do not say anything. It is not always, it seems to me, that the oldest or most experienced man, gives the best instruction. Some things that we say, and we see them when put in print, do not seem to contain great wisdom, and they may even seem absurd and foolish, but the earnestness and the manner of the speaker has a great influence that is incalculable in results because it may set some one to thinking. As I view my own professional life, looking back over its history, I find what it was that has inspired and stimulated me. It has unquestionably been the men with whom I have been associated. They gave me all the professional insight that I have ever obtained. It has not come from the things they said to me, but from the manner in which they said these things, and the earnestness with which they brought these matters to my notice. The numerous men that I have known in my professional career have had a wonderful influence upon my life, and it seems to me that I owe so much to these men that I can never repay it except by doing what I can to pass it on and make others happy. When I read the thoughts of other men, I read a great deal written by men that I have never seen, but their influence has been nothing to compare with that of the men I have known in person, and with whom I have discussed the problems of professional life, or that I have seen face to face and that I have been privileged to take by the hand and have a cordial and friendly greeting, while they have given me helpful words of encouragement. It seems to me that this is one of the greatest influences of association work and that it does a great deal towards developing our professional careers and instincts. I believe, truly, that nothing can take the place of the Dental Association or convention. Dental conventions are numerous now-a-days,

and it sometimes seems as though we were overdoing the convention idea. There is, today, in session in the city of Chicago, The American Medical Association with an attendance of fifteen thousand physicians and dentists from all parts of our country. There are conventions of various kinds all over this country at this time of the year, and the amount of money and time that is spent in attending them would print a lot of books which could be distributed to every man who is interested in dentistry in this country, and might bring all known knowledge to him, and he might learn the things he ought to know. But I doubt whether all the money spent in this way could be spent to as good advantage as the money we shall spend in attendance upon this convention. This is a grand opportunity to look into each others faces and to find out what each of us is doing, to get the word of cheer, help and comfort that we can get in no other way—not even from books or professional periodicals. I feel as though the one thought I want to emphasize in this discussion is that the opportunity which the dental convention affords to the young man to find himself, or the old man either, can nowhere else be realized so completely as in associated efforts of earnest and faithful professional men.

As a means of inspiration it is invaluable in many ways. When you attend dental associations your patients, your friends and acquaintances all know it and they will soon notice that you have been somewhere. You have lighted a new torch; you will do your work better and with more enthusiasm if you attend the meetings.

I want, also, in this connection, to say something about the small society or association. I know of several small cities where organizations have been formed recently, and the whole community, so far as professional interests are concerned, has been revolutionized; where before the dentists were merely speaking to each other on the street, they are now good fellows, they meet each other socially, they meet in society work more often. They stop and converse with each other on the street. They have stopped saying mean and contemptible things about each other and have created a purer atmosphere and are happier, as well as more prosperous, and their people are better served.

I know one community that is now completely disorganized professionally because the dentists in that city refuse to have anything to do with each other. Those men are no longer professional; they have lost their way; they are groping in the dark, and it is a pity that they have gotten into such a condition as that, it is bad for the community.

Let us encourage this association idea and get into the habit of attending conventions, such as we are having here today and such as are being held in Chicago and many other smaller places. If there are no more than three or four men in a village they should get together and organize an association; dine and visit, do anything in a social way that will bring you nearer together, talk professional affairs and find out what each one is aiming at, and if some are aimless get them interested in something of a professional character, and I am sure in this way we can help our neighbor to hold his place, and we shall all get a greater conception of duty.

Dr. J. D. Patterson, Kansas City, Mo.: The subject is a very good one, and it appeals to me. It is a sad commentary that only a small per cent. we see here today, represent such an enormous number of people who are in what they call and what we call the dental profession. It is too bad. We are all members of the profession, for a specific purpose. It is every man's province to live in this world of ours, to improve and to become better year to year, month to month and day to day. No man should be satisfied to live from one day to another and not improve, not look up to the stars, not to have any new ideas in regard to life and its function. The average man too often lives a routine life, and so goes along until he dies. We have something more than that to do; we have to connect our lives with the world, and we should view it as well as be able to live in it. I think that is what the dental association does. I know that it has done so for me. I like to see my fellow members, and the men in the profession today seem very different from what they were many years ago. I think

this is because I have met them and learned their trials in practice and in theory and in filling their places in life.

We cannot be good citizens until we are good dentists. The meetings and association work does that for us; it gives us higher ideals than the mere routine of daily practice. The profession of dentistry is so exacting that we must be above the rank and file in order to do our duty.

Dr. C. E. Bentley, Chicago, Ill.: It would be presumptuous for me to discuss this paper if it were not for the fact that I am vitally interested in the subject, vitally interested in the things that it deals with. However, in view of the fact that I have not heard the paper and have heard only a part of the discussion, not knowing exactly what has been said, I speak at the risk of repetition. Dr. Patterson stirred the red blood in my veins when he spoke of the power of association and some of its beneficial results; and in the light of what we have done in Illinois and in view of some of the recommendations of Dr. Hoff, I feel justified in bringing this matter up again and giving a word of good cheer.

The most powerful civilizing influence in the world is that of contact: Contact with your fellowmen, contact with them in the things that interest them, and contact with them in the things that are of common interest to you and to them. You may read the teachings of an individual, but when you have seen the man, when you have looked into his eyes, your estimate of him may be entirely different from what it was when you read his writings; and you may hear individuals and see individuals, but it is only by these points of contact, I may say, that you really get close to them, to the inner conscience, to the inner self, and that is, as I say, the most powerful civilizing influence in the world.

Now, in associations, and particularly in dental associations, this opportunity is afforded pre-eminently. In the state of Illinois, by the adopted method of organization, we have been able to do a great many things that were unheard of before. At the last meeting of the Illinois State Dental Association we had something like fifteen hundred members in good standing, men who have subscribed to the constitution and men who have paid their dues. They first have to be members of their local society before they are eligible to membership in the state society. This gives the local society all opportunity to pass judgment upon the individual as to whether he is fit to become a member of the state society. What we have done in Illinois by reason of the activity of our members is considerable, compared to what it was several years ago, when we had only about four hundred and fifty members. We have been able, by reason of our membership, to go before the state legislature and demand of them certain laws for the government of the practice of dentistry in that state. Four years ago we went to the legislature, or to the committee on legislation, and they asked us this very significant question: "What proportion of the dentists practicing in the state of Illinois belong to your association?" and we had to hang our heads in shame because this proportion was a very small one. But when we went two years ago and showed them an enrollment of twelve hundred members they commenced to sit up and take notice. The governor and the authorities who are interested in politics said that dental legislation must be looked into, and with a certain amount of leverage and with a certain amount of political organization back of the dental association, we were able to put through in the state of Illinois a law that I believe is the equal of any law in this country in any state. We have stimulated in the various localities a professional feeling; we have created a new enthusiasm among the members and they have organized study clubs for the purpose of the betterment of the profession. They are divided into various little groups and districts, and for the first time in their professional lives they have shaken hands with each other and call each other friends—all through the medium of contact. There is a spirit of fraternalism and friendship that has been unknown and unheard of in the smaller towns. Now, what can be done in Illinois can be done elsewhere, and if the

states of this country will follow the lead of Illinois with reference to this plan of organization for its members we can have a national organization and representative body that I think will mean a great deal to the dental profession. For the last two days I have been in attendance upon the American Medical Association in the city of Chicago, and I believe that they claim they have something like fourteen thousand men in attendance. The whole association of dentists of the state of Illinois was patterned after the plan of organization of the National Medical Association, and if we get an organization like that of the American Medical Association, we can get most anything we wish. The president of the National Medical Association said that several years ago when the national committee on legislation went to Washington they were met at the door of the committee room, and the chairman of the committee said. "Gentlemen make your demands as brief as possible, and in as few words as possible." Several years after this same committee went to the chairman and he said: "Gentlemen, you can have such time as you wish, and use such time as you wish. Our time is at your disposal."

Now, he says when they go to Washington they go to the hotel and send for the congressmen and indicate to them what they want.

Dr. Holmes. (Closing the discussion): I am sure that we are all anxious to hear the paper of Dr. Zederbaum. The criticisms that Dr. Patterson and Dr. Callahan made were well taken. I believe that we should undertake the national association idea, and have a National Dental Association.

A USEFUL HINT

By **Dr. E. F. Carter, Medford, Mass.**

It often happens in dental work that we desire a piece of gold with a hole in it to accurately fit a certain size wire or post. I have found the following method to be perfection regardless of shape desired. Either cast the gold over or flow any K solder over a piece of platinoid of the desired form to whatever thickness is required and place same in nitric acid which will cut out platinoid, leaving a perfect hole into which a similar piece will fit exactly.

There are loyal hearts and spirits brave,
There are souls that are pure and true;
Then give to the world the best you have,
And the best shall come back to you.
Give love, and love to your heart will flow—
A strength in your utmost need;
Have faith, and a score of hearts will show
Their faith in your word and deed.

—*M. S. Bridges*

MISCELLANY

DENTISTRY IN 1958—A GLIMPSE INTO THE FUTURE

By F. B. Spooner, D. D. S., Brooklyn, New York

(Concluded from page 403, May Summary)

SYNOPSIS: A New York dentist, while hunting in the Rocky mountains, is buried by an earthquake. He wakes in 1958, is rescued by a flying ship, and carried to Denver. While in the insane asylum his pretty nurse tells him of the marvels that have happened in the past fifty years. He proves that his story is true, and is visited by some professional brothers. One of them—Dr. Handsome—tells him that it is easy to collect debts in the new regime, upon hearing which he faints. His nurse takes him to the open air, where he sees night falling on the city, and learns, while sitting in the gloaming, that he once made love to her great-great grandmother 90 years before. He visits a great dental college, learning the events that have taken place, and sees on a great screen, the birth of the Soul. This is seen by micro-photography. He returns to Denver, finding Mrs. Avery has arrived on the Condor. War is imminent with Japan, the U. S. having been so unethical as to place a duty on teeth. Gen. Roosevelt seizes the airship, and sets off to intercept the hostile vessel which is on the way to destroy the country.

MRS. AVERY'S eyes glittered, but like a well-bred woman, made no scene. She bowed coldly as I introduced her to Agnes, and then asked me to step to the bow of the ship, which I did, making apologies for the awkward part I had played.

After a short interview I sought the company of Agnes, who pointed to different objects of interest seen in our flight over the mountains. At a distance was a sheet of water, formed in the Rockies by excavating a mammoth reservoir. This herculean task was begun in 1925, using millionite which, with each explosion, dislodged what would ordinarily take one thousand men a year. A lake was formed over five hundred miles long, flooding the country, while power was developed to supply the west with heat and light, even extending to the Atlantic, making a coal famine no longer dreaded.

After supper I became well acquainted with General Roosevelt. The evening had reached us as we sat together near the wheel, the use of which he patiently explained. Hearing more fully of his dangerous mission, my mind worked on a plan which I was so presumptuous as to make known. "Excellent," he said. "Bully!"

Late that night we arrived at San Francisco. Traversing the silent streets we came to a large building over which was an immense set of gold teeth and the name RANSOM & RANDOLPH Co. It required little time for two soldiers who were with us, to raise a case between them, after which we regained the Condor.

The General now took me fully into his confidence, disclosing that it was left to his discretion how to intercept the coming foe. Due to haste, there were no weapons save the rifles of the six soldiers, but these were terrible. Invention had reached the stage where an ordinary gun was capable of discharging one thousand shots a minute. Being interested in all things mechanical it required but a short time to become familiar with the wonderful tool. A feature was that no weapon could be used, if captured, without a combination key, carried on the General's watch chain. The rifles made no sound. They were handled as a gun is usually held, the feed being a flexible tube leading to the ammunition case. A marksman could discharge a stream of steel to the distance of a mile. While this was novel, I heard the Japanese had a new implement of warfare concerning which strange things were rumored.

As it was early in the morning, the General lay down to gain some sleep, he kindly loaning me a great coat belonging to one of the privates. It hardly seemed a moment that I was unconscious, when I awoke to find the Condor was NOT in motion. The situation dawned upon me as I perceived a Japanese officer at the helm, smoking a cigarette.

I said, "Hullo!"

He answered, "Who are you?"

After an explanation, he responded, "You are the man we want."

He courteously helped me to rise, upon which I saw the Japanese vessel lying alongside. Usher'd into the cabin there sat a high dignitary suffering with pericementitis. Ordering hot water prepared, I told the officer I must have some medicine from the Condor. My friend told me that they had paralyzed our crew from a distance of thirty miles by means of a Rayeton. I was not affected as it traversed the ether, attacking those of a *certain* age, and not imbeciles, women, children or old men.

I told the agreeable Jap that I needed the services of my nurse and suggested that she be revived. He displayed the device which had made such havoc. It was a rubber tube, at one end of which was a red point, and the distal part consisted of a grey ball. Removing caps that covered the extremities, the implement was directed. The red was the destructive agency, while the grey reversed the effect.

In a few minutes Agnes was on her feet and like a brave girl helped me to unpack the dental outfit. Taking a case, and my old friend Iodine and Aconite, we rejoined his Excellency who was grateful for some relief, so much so that after I had placed an ounce of my friend on an ounce of cotton, and inserted between the sub-maxillary and the buccal muscle, he was gracious enough to explain why his country had committed an act of war.

"You see, Professor," he began, "your country is inconsistent. We are afflicted, hence against all *ethics* to put a tariff—equivalent to a patent—on means for relieving human suffering. One of your great editors in his magazine, *Pickings of Interest*, claimed that no patents on such processes should be granted."

"True, your Worship," I made reply, "but as I recall, he reversed this view in the case of Dr. Taggart, whose invention had not a leg to stand on save the PROCESS."

"Exactly," he answered, "I refer to the primary sentiments of the gentleman before Dr. Taggart made known his device, or process."

At this point he expectorated violently, whether from the effect of my medicine or to relieve his feelings, I cannot say.

"By the ten horns of Buddha, what is this swill you have been giving me?" he ejaculated.

"Your Highness," I interposed regretfully, "I will not deceive you, as I despise all two-faced methods. This horse medicine is designed to affect the nerve root of the lymphatic gland, hence your tears. By stimulating these centres, there is an exudation from the lower eyelid, which, having an alkaline reaction, attracts the lime salts from the apical foramen, exhausting pressure on the pneumogastric nerve."

"I guess you understand it," he said doubtfully, "but it is Greek to me."

"Sir," I made answer, "whatever doubt there may be in your mind as to the Doctor's ethics, I can assure you he would hold one opinion as to this diagnosis."

He reached for a volume of *Pickings* and grunted, "Here is an account of a resolution drafted by your friend and adopted in the Society that it be deemed 'Unethical for a dentist to give honorariums,' but nothing is said as to *receiving* them."

He poked his head forward, as though to emphasize "now I have you."

"Your Greatness," I countered, "it matters much which side you are on."

"Yet," rejoined the Infidel, "the receiver is as bad as the giver: what sense to argue with those who hold that a man may ethically *take* what he knows is *wrongly* given. With such, the only way is to drop some dynamite on them to quicken their faculties, for what is a few thousand lives, and a paltry loss of property to clear up a great principle.

Disgusted with this sophistry, I made no answer. He looked from the window over the heaving Pacific, ruminatively chewing on his inflamed gums, and resumed.

"You do not know (as you were dead), that your friend appeared on the floor of the Senate chamber, and (when his early views as to processes were quoted), said, 'An inlay device was to repair enamel, not allay suffering.'"

"I should think you sublimity," I answered shortly, "that this clever man discomfited his enemies in a most able manner. And now I would suggest that all these ragged arguments are making your teeth more loose, and you had best sleep."

Reaching the Condor, I noticed General Roosevelt still unconscious. The officer guiding the ship was so friendly that he asked me to look at his

mouth. I found it in a terrible condition. First applying the dam, while Agnes handed me the forceps, three of his teeth were hurled into the Pacific when I perceived that the little warrior had collapsed. In his struggles the Jap had dislodged the red end of his Rayetone. I was in the act of arousing him when the bright thought came to make *more* sleepers. Taking the magic stick the rest of the crew were launched into oblivion.

A hail came from the Japanese ship. Horrorstruck, I saw them gathered around a bright implement like a howitzer, which they were making frantic efforts to load. I grasped a gun from the case and thought of the key I had taken from the General. It acted admirably. I pulled the trigger, pointing at the gas bag, and saw a streak of light where the stream of bullets was rending the structure into fragments.

The peril was now imminent, for the Japanese had the shining machine pointed, one of them looking along the barrel. Bringing my weapon to cover the result was astounding. I rejoiced that in my youth I loved firearms. The man's cap flew off, and he sank back. The rest were mown down, all save the Prince, standing a short distance away, who I did not wish to destroy, as he owed me a bill for dental services.

Looking down from the Condor I watched the warship sinking slowly towards the ocean far below. I felt sadness at the bloodshed. Agnes placed her soft arm around my neck saying:

"Cheer up, darling, it was in defense of the stars and stripes."

"Alas!" I responded, "but I am not ethical, the Japanese were right."

"Do not let that worry you," she gently murmured, "there is so much humbug in this world, and many there be who write of *ethics*, but their real principles are as the 'wind which bloweth whither it listeth.' "

INDULGENT reader, if you have perused these adventures of a simple dentist with the slightest pleasure, I am truly grateful. Should you doubt the veracity of any statement, I will say that a dentist who can pull a tooth, and shoot chipmunks when a boy, could have done as well. Opportunity is the great factor in fortune.

I put in a bill to his Excellency of five thousand dollars for services rendered. The Supreme court decided I was "a good soldier, but a bad dentist." I applied for a pension, but the same court ruled I was not "enlisted, hence no soldier." Suing the Government they maintained I could not get *salvage*, as I was a combatant. This was reversed on appeal, with the grant of one million dollars, but, as I was dead, legally, my heirs could only recover, and my estate having been settled, the cunning rogues saw a way to keep the money. Agnes had applied to the pension office as a widow. This was granted as a cheap way out of the matter. She then demanded half of the million, as the legal heir, and this could not be dodged. A friendly suit compelled Agnes to pay me the money, as I was "alive." She then sued the United States for the loss of what was declared *hers* and later decided *mine*. This was good law, consequently at the end of ten years we got the cash.

In the meantime I supported myself selling photographs, delivering lectures and writing pipe dreams for the magazines from which I made five dollars a word, or I should not have been able to keep up the fight.

Certain unprincipled relations are now pestering the Government (as my legal heirs) seeing as Agnes could not marry a *dead man*. It is a sad tangle, like the controversy over the Taggart patents, which was closed by the editor of *Pickings* who wrote a masterly statement in 1912 that "process patents were as you wanted to look at them." He was presented with a vote of confidence and a loving cup by the Sophia Dental Society. The next issue of *Pickings* had thirteen views of the same.

Agnes declined to keep her share, saying it was "Blood Money."

She sent it to a Japanese soldiers' home, but the secret leaked out, hence the Mikado forwarded an order of the Holy Ghost, made from a diamond as large as a hen's egg.

I prize a certificate of honorary membership from the Colorado Dental Society. In it Dr. Handsome is portrayed as the "good Samaritan" and in the distance Indians are dancing around a victim.

Another wedding tribute represents a giant set of teeth, six feet across and ten feet wide. It is solid gold and in olden times would be worth twenty-three million dollars. I keep it as a horse block. The princely gift was from that great house THE RANSOM & RANDOLPH Co., who so nobly aided me in my claim against an ungrateful country.

So as in the story of "Puss in Boots"—who only hunted rats for his own amusement—I only practice when I feel like it. My heroic treatment of the Prince brought me great fame; so much so that I sell a preparation which I call "Swiloe," at ten dollars a bottle. I have not patented it, as I cannot; I have not given it to the profession, as I prefer the money, and I do not pay "honorariums" for I love myself more than my neighbor.

Agnes insists that I say this for she despises deceit, ever trying to smooth my wrinkled morality. I trust her in all and never found her fine sense fail save once. She insisted that I invest in stock concerns which make tooth powders, washes and the like, as they pay 20 per cent. Craftily I put half in gilt-edged bonds * * * she says she is now sorry, but we have plenty left.

I visit all Conventions where the Chairman invites me to make a few remarks. I am given awesome respect as I tell that old tale of how *once* a dentist could not go outside his State without asking permission from five others. The young men smile in doubt, but the older generation remember that *dark* time. Agnes always sits by my side and softly tells me when to stop.

It may be given me to write more of this pure age of Socialism, but who can tell. I begin to feel the heave of the ocean and tell Agnes I will wait for her outside the bar, for I would not care to go alone, even

to leave this world. She tells me "life is a span long, and in the beyond we shall be together, having no dentistry—no dead teeth—no pseudo journalists, or dentists hating their brothers—for there shall be no pain there, or any tears."



THE AUTHOR—DR. F. B. SPOONER.

**REPORT OF THE COMMITTEE ON CLASSIFYING AND INDEXING
DENTAL LITERATURE TO THE INSTITUTE OF DENTAL
PEDAGOGICS AT THE ANNUAL MEET-
ING, ST. LOUIS, 1908-09.**

The undersigned committee, appointed by the Institute of Dental Pedagogics for the purpose of devising ways and means of classifying and indexing current dental literature, as an evidence of progress, present to the members of the Institute and others interested the following plan:

I. That the subscribers to this plan organize themselves into an association to be known as The Dental Index Bureau.

II. That the above mentioned committee, appointed by the Institute, will devise ways and means for carrying out the work of the Bureau during the coming year, and will call a meeting at the time and place of the next meeting of the Institute, for the perfection of a permanent organization.

III. That this committee will employ a competent person to classify as much of the current dental literature as possible, beginning with the January, 1909, journals, and will furnish subscribers, at frequent intervals, with author and subject cards of all articles classified.

IV. That this committee will be guided by a vote of the subscribers in the selection of the literature to be classified.

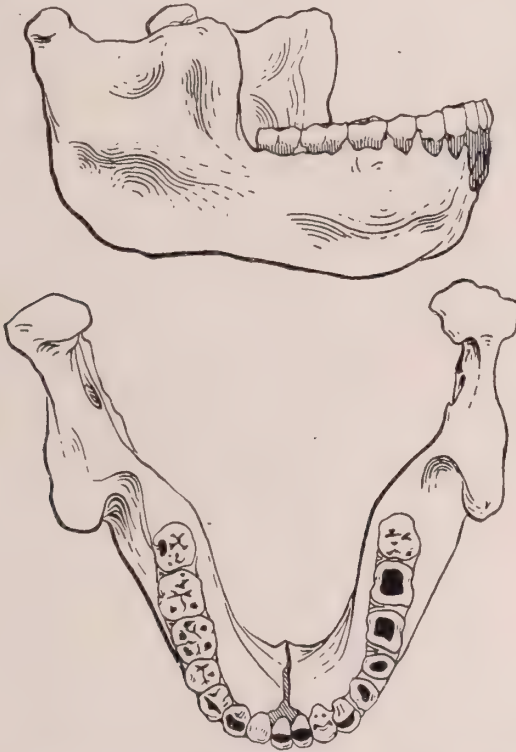
V. If the fund subscribed will permit, as much as possible of the literature of previous years will be similarly classified and indexed.

W. L. Fickes, Chairman, 6200 Penn Ave., Pittsburg, Pa.; Arthur D. Black, 31 Washington St., Chicago, Ill.; Henry Prinz, 603 Century Bldg., St. Louis, Mo.

EDITORIAL

A JAW BONE—THE EARLIEST KNOWN RELIC OF MAN

WE LEARN from *Literary Digest* that a human jaw unearthed in a sandpit near Heidelberg, Germany, is described in *La Nature* (Paris, March 6), by J. Deniker, who finds reason to declare it the earliest known relic of man. The writer recalls the well-known fact that all fossil human bones found up to the present time, either in Europe or in other parts of the world, do not date back be-



yond the middle of the so-called quaternary period of geological time, which immediately preceded the present era of the earth's history. No authentic human bone is known to have been found in the earlier quaternary, whence there have been recovered only certain utensils. As for tertiary man, we have yet no certain proof of his existence, either from implements or from bones.

The so-called "Neanderthal" skulls and skeletons, found in the basin of the Dordogne, of which so much has been said in recent times, date only from the middle quaternary. Now Mr. Schoetensack, a German scientist, who for twenty years had been watching the working of a sand-pit near Heidelberg in the hope of finding there the remains of a fossil man, exhumed from a stratum belonging clearly to the lower quaternary, if not to a layer between this and the pliocene, a remarkable jawbone which he regards as that of the oldest known man, perhaps even of a precursor of man.

This precious find was made in the Mauer sandpit, six miles southeast of Heidelberg, at a depth of 24 meters (80 feet). The jawbone is admirably preserved, and has all its teeth. It differs in many respects from known human jaws, actual or fossil. At first sight it recalls the lower jaw of the gorilla. The general thickness of the bone is almost double that of modern man, and their form is absolutely human; all are pressed closely together and no one is longer than the others. The chin is very retreating, with prints of the insertions of the lingual muscles very pronounced. If the jaw be placed on a horizontal plane, its anterior part does not touch the surface.

Is this jawbone that of a man? Mr. Schoetensack apparently thinks that it is, since he attributes it to a new species of the genus *Homo*, which he calls *Homo Heidelbergensis*; at the same time he thinks that this "Homo" was rather a precursor of modern man or even the common ancestor of man and the anthropoids. In fact, the general aspect of the jaw is that of an anthropoid, while the dentition is very human. This fact, it seems to us, makes it impossible to attribute it to the *Pithecanthropus*, since the two teeth of the latter are much larger and more massive than the corresponding teeth of man.

However this may be, the importance of this discovery will be clear to all, and the comparative study of this "pre-Neanderthalian" creature (of which it is to be hoped that other remains will soon be found) with the Neanderthal man promises to be very fertile indeed.

MEN YOU KNOW

"THE EDITOR MAN"

See who's here. The Editor Man.

Now you're up against a proposition. Kicks are not recorded.

Why, one day some humorous friends of an editor inveigled him close to the business end of a kicking mule, to settle some grievance, but to their dismay that sagacious Mr. Mule never raised a hoof. He took one look at the editor then meekly hung his head as much as to say:

"Aw! What's the use? That fellow's calloused all-over."

The editor is a proposition. You may think you know him but you don't; so I am going to give you a little inside information about editors.

Someone has said that some editors do have fertile brains.

Complimentary, wasn't it? But then any old compliment pleases an editor. But speaking of fertile brains reminds me of two men who were one day discussing the question why it is that the majority of editors have such a luxuriant growth of hair on their heads, and being unable to decide, they agreed to leave it to an Irishman who was passing.

Now, Mike had heard editors referred to as men with fertile brains and when asked if he could answer the question, he replied:

"Begorra, I kin that. The raison is, the hair can't help but grow on the hids o' thim iditor fellows; they've got so much fertilizer in their brains."

But editors are good men, you must admit that, especially dental editors. The dental editors of the past were good men: their biographies tell us so. And those of the present we know to be good men for their autobiographies say so.

Again, the editor is a victim of circumstance.

If he refuses to publish a contribution, he is cursed by the author; and if he publishes it he is cursed by the author's enemies. There is no middle ground for a dental editor. He gets the worst of it both going and coming, so to speak. If he writes a brilliant article, he's denominated a smarty; if he doesn't, he's called a dullard.

If he publishes original matter they say he don't give enough selections; if he gives them selections, they say he is too lazy to write or get original material. If he publishes jokes, they say he's rattle brained; if he don't, he's a fossil.

If he lives in a valley, they accuse him of living a low life; if he moves up onto a hill, then they tell the people that he is simply "living on a bluff."

If he won't fight, he's called a coward; and if he does fight, he gets licked.

The dentist can use a word a foot long without even knowing the meaning of it, but if the editor uses it, he has to spell it.

A dentist may sing and quiet the nerves of his patients, but if an editor sings—say, an editor is never more alone than when he sings; it is one of his weapons of defense.

I once knew an editor who thought he could sing but was persuaded to have his voice tested by a noted professor of vocal music, harmony and thorough-bass. The professor told him that there was no question about his singing being base, and quite thoroughly so, but he didn't detect any harmony in it. He also told the editor that he had a remarkably good eye for music, but a bum ear, and that the only possible way to bring out his voice would be to cut his throat.

If the dentist makes a mistake, he can cover it over; but if an editor makes a mistake, and doesn't get covered over for it, he has to at least apologize.

On the other hand, if a physician makes a mistake, there is a funeral, cut flowers and a smell of varnish; but if the editor makes one, there's a lawsuit, swearing and a smell of brimstone.

If a dentist tells a man that his wisdom teeth are not yet erupted, he grabs the dentist by the hand, thanks him, and goes down stairs looking forward to *more* trouble; but if an editor tells a man that he hasn't cut his wisdom teeth, the man grabs the editor by the neck and the editor goes down stairs looking forward to *less* trouble.

A dentist receives a visit from another man's wife and makes a charge for it; but if an editor receives a visit from another man's wife, the editor gets a charge—of buckshot.

'Tis true an editor can have the last word, but too often, nowadays, the last word is: "Stung!"

If you don't see good points in his journal, don't fail to see a bad one, and raise a howl if you find one.

If a thousand pleasant things are said hunt for something unpleasant. Watch for something to find fault with, even an editor is not perfect.

Nevertheless the editor is a good man and I'll tell you why he is. From what I have said you will see that:—

He's thus a man of circumstance,
If not of circumstances,
When anything goes wrong, perchance,
The editor, he dances.

He's charged with this, and charged with that,
And flagrantly berated;
E'en meowed at by the office cat,
And by the devil's hated.

He's blamed for everything that's wrong;
He causes all the trouble;
He's hissed at by the gathered throng,
And charged with playing double.

He dare not talk; he just "saws wood."
And with me you'll agree,
That why an editor's so good,
'S because he has to be.

But with all his faults the editor works year in and year out: morning, noon and night, in preparing a feast of good and useful things for his brother men.

The midnight oil is more familiar to him than a compliment, but his post of duty is never deserted.

NEW PUBLICATIONS

DES DENTS A PIVOTS. A Manual of Theory and Practice. By Victor Dubois, Editor of *The International Review of Prosthetic Dentistry*. Prefaced by M. Bonnard. Published by Vigot Bros., 25 rue de l'Ecole-de-Medecine, Paris, France, 1909.

This volume, written in French, is the first of a series of the Library of Prosthetic Dentistry and devoted entirely to the crowning of teeth. It contains the history of the pivot tooth, different kinds of pivots, different kinds of pivot teeth, special crowns for pivot teeth and pivot teeth systems. One of the most worthy features of the book is that opposite each description, which would be sufficient in itself, one finds illustrations where the form of the tooth or system used is demonstrated most clearly.

MANUAL OF PHYSICAL EXERCISES. "A Health Hand-Book," by A. R. T. Winjum, M.E., Director of Physical Training, Battle Creek Sanitarium, and the American Medical Missionary College. Price, cloth, \$1.00.

This is one of the most complete and practical hand-books of its kind ever published. It contains 360 pages, over 300 photographs, drawings and diagrams.

The exercises offered cover a complete range of physical culture; free-hand exercises, breathing, chair and floor exercises, dumb-bell drill, wand exercises, fencing, Indian club exercises, boxing exercises with supplementary exercises for developing the muscles.

One of its most interesting features is its Business Men's Home Drill. It is especially adapted to the use of sedentary workers who feel the need of simple home exercises as a means of toning up the general system.

It is the author's idea to show the reader by a series of large plates, the principal muscles of the body, and by means of short and complete instructions and numerous illustrations, how he can most easily develop any of them in a scientific way. It is a work that every dentist can follow with great benefit and worth to him many times the nominal cost of the book.

A PRACTICAL TREATISE ON AUTOMOBILES. Edited by Oscar C. Schmidt, formerly editor of *The Practical Engineer*; formerly Assistant Professor in Mechanical Drawing and Mechanical Engineering, Drexel Institute; Consulting Editor American Text-Book Company. Philadelphia: American Text-Book Co., Publishers, 1909. Price, two volumes, \$12.00 net.

Every owner of an automobile or prospective buyer, ought to know the mechanism of his car; its advantages and disadvantages in reference to other types of cars; how the car operates; how it is constructed, and in fact everything about its make up. With this object in view these books were written. The text covers more than 900 pages and is profusely illustrated with photographs, diagrams and line cuts. It is the latest and best work on the subject and thoroughly practical in the explanation and description of the various parts of an automobile.

From the time that the gasoline enters the gasoline tank until the time that it exhausts from the muffler, the course of the gasoline and its action are explained. The different methods of cooling the cylinder, and the different types of radiators, water pumps, engines, as regards the number of cylinders and their position in reference to each other, are clearly explained, together with the method of mounting them upon the

frame. The action of a two-cycle and four-cycle engine, together with their advantages and disadvantages in automobile driving, are considered from a practical standpoint, and one can get many valuable unbiased comparisons between all the various principles of automobile construction in use at the present time.

Each of the different kinds of transmission systems, change speed gears and differentials in general use is clearly described. The advantages and disadvantages of the shaft and chain drives are considered, and considerable space is allotted to the friction change speed gears which are coming into considerable use, particularly on the lower-priced cars. Among the other types of change speed gears described are the planetary gear, progressive sliding pinion change gear and the selective sliding change gear.

The cone clutch, the band clutch, the internal expanding clutch and the disc clutch are all described, together with their advantages and disadvantages.

Various kinds of wheel and transmission brakes are described, together with the various kinds of brake linings in general use, and general brake construction is given.

Of springs and axles all the various types of platform, semi-elliptic, full elliptic, three-quarter elliptic and scroll springs are taken up, together with the reasons why springs break, and the different types of shock absorbers which are used to prevent spring breakages.

The rapid increase in the use of ball and roller bearings has decreased the friction throughout an automobile very considerably, and in this connection various types of ball and roller bearings and solid bearings are explained.

The different constructions of tires are explained. All the different forms of demountable and detachable rims are explained. The objections to small tires on pleasure cars, motor trucks, etc., and the uses of solid, cushion and combination tires are given.

Nearly one hundred pages are devoted to carburetors and fuel mixtures, in which all the different types of fuel in general use are explained, together with the various mixtures which are being experimented with at the present time for the purpose of replacing gasoline as a motor fuel. The different methods of vaporizing gasoline are explained, and the law of carburetor action is described in detail. Different methods of feeding gasoline to the carburetor, and the various methods of controlling and priming them, are described. Fifty of the best known types of carburetors in general use are shown in detail, together with a drawing of each and its method of operation.

The different systems of ignition, such as the high and low tension system, the make-and-break and jump spark systems, are explained and the methods of wiring are given. The different kinds of dry, wet and storage batteries are taken up, and the troubles with storage cells and their method of charging, together with a large amount of other valuable information about batteries of all kinds, are given. In connection with the different ignition systems, the single spark, multiple vibrator coil and single coil distributor systems are explained.

Different kinds of timers and distributors are explained in detail, together with the construction of spark plugs and the efficiencies of the various types of insulation used with them. The laws of electric currents are taken up, together with the laws of magnetism, electro magnetism, self-induction and mutual induction, which are the fundamental principles upon which all spark coils operate, after which different kinds of induction coils, trembler coils and vibrators are described.

The advantages of the magneto, together with the different types, such as the alternating current, high tension and low tension magnetos are explained. The two general types of rotating armature and inductor magnetos, are explained, together with their method of timing. A large amount of valuable information in connection with magnetos is given as to the care and maintenance of all the types of magnetos in general use.

All the different methods of mounting engines are explained, together with the

three-point suspension. The method of connecting the engine to the rear axle is also considered from every standpoint, showing how the change gear is combined with the gear box in some instances, and how in others it is connected to the rear axle, while in others it takes an intermediate position between the rear axle and the engine proper. Different methods of connecting the engine by means of universal joints are explained, and the use of the torsion and distance rods is described.

Not only are about twenty-five different lubricating systems explained in detail, but the value of a good lubricant and the method of testing them are given, and such tests are explained as a practical man may readily be able to make.

Various practical points for the car user are given, which will give him valuable information regarding the care and maintenance of his car, together with the methods for finding the troubles and remedying same. In this connection a large chart is given, which will indicate immediately what the trouble is in case the motor should stop, and how by a process of elimination the exact fault may be found. Different instructions for operating the different types of cars are also given, so that the owner or chauffeur may obtain valuable pointers which will enable him to operate his car very much more successfully than he otherwise could without this knowledge at his command.

There is also a chapter on shop kinks, which will give one pointers as how to line up the front wheels, how to put in cork inserts, how to repair radiators and a large number of other valuable pointers. In connection with garage notes, different methods of cleaning the car, charging batteries, fire protection, polishing brass, fitting leather to a cone clutch, etc., are given.

There is a chapter on the method of finding the horse power of an engine and how different cars are rated.

Different methods of timing are given, so that should the timer or make-and-break mechanism get out of order the engine can be made to spark when the piston is at the proper point in the stroke.

There is also a chapter giving the specifications of all the different types of electric, gasoline, steam and commercial cars in general use, and in this connection the seating capacity, the horse power, the number of cylinders, the diameter and the kind of ignition, the kind of lubrication system, the size of the wheels, the size of the tires and other valuable information are given about all the well-known types of cars in general use. There are about two hundred or more of these types explained.

All of these subjects are written without employing any mathematics or technical terms which cannot be easily understood, except in one or two places where it is found absolutely necessary to exactly describe either the method of operation or the principle of construction of a given part.

All of these subjects are exceptionally well indexed, so that by turning to the index any subject may be found and the correct information obtained quickly.

The work tells you everything about automobile construction, it is clearly written, profusely illustrated, and of great value to every automobile user.

LIFE is a mission. Every other definition of life is false, and lead all who accept it astray. Religion, science, philosophy, though still at variance upon many points, all agree upon this, that every existence is an aim.

—Mazzini.

SOCIETY ANNOUNCEMENTS

ALUMNI ASSOCIATION UNIVERSITY OF CALIFORNIA

The Alumni Association, College of Dentistry University of California, and the California State Dental Association will hold a joint session on July 6, 7 and 8, at the College of Dentistry building, First and Parnassus Aves., San Francisco.

Arrangements are being made which promise to make the session mark an epoch in dental work on the coast. Dr. John Q. Byram has been secured and attendance at his clinic will be equal to a post-graduate course in porcelain. Negotiations are being continued for one other eastern clinician with promise of success.

Save these three days for a most profitable meeting—the knowledge gained will amply repay you.

CHANGE OF PLACE OF MEETING OF VIRGINIA STATE DENTAL ASSOCIATION

On account of The Mecklenburg having been destroyed by fire the place of meeting of the Virginia State Dental Association has been changed to The Chamberlin, Fortress Monroe, Va., July 21, 22 and 23, 1909.

W. H. PEARSON, Cor. Sec'y.

INDIANA STATE DENTAL ASSOCIATION

The fifty-first annual meeting of the Indiana State Dental Association will be held in Indianapolis June 29, 30 and July 1. The program is now completed. The papers are all on up-to-date subjects. The clinic will be the largest and most helpful in our history. The exhibits will be many and very instructive. The prospects for a large attendance are very flattering. You are invited. Remember the dates.

DR. O. U. KING, Secretary, Huntington, Indiana.

MAINE DENTAL SOCIETY

The forty-fourth annual meeting of the Maine Dental Society will be held at the Peaks Islands House, Portland, Me., June 24, 25 and 26, 1909. It is confidently expected by the Executive Committee that this will be one of the most successful meetings ever held by this society. All ethical practitioners of dentistry are welcome to these meetings.

E. P. BLANCHARD, Chairman Ex. Com., Portland, Me.

H. A. KELLEY, Secretary, Portland, Me.

WISCONSIN STATE DENTAL SOCIETY

Beginning Tuesday, July the 13th, the first meeting of the Society, since its reorganization into districts, will be held in Milwaukee in the new public Auditorium building and it will be the conscientious endeavor of the officers and various committees to make this one of the most notable meetings in the history of the Society.

The time-worn custom of inviting essays on any old subject is to be replaced by an operative and prosthetic symposium, each at a separate session with the subjects of essays chosen with a view of bringing out the most opportune in these fields. The time of the essayists will be limited to twenty minutes to be followed by nominated leaders of discussions who will be limited to ten minutes—volunteers following will be limited to five minutes each.

Special attention will be given to the numbering and placarding of the clinics and in the program each clinician will be required to state the salient features, improvements, advantages, etc., of his operation. In addition to the title, each essayist will be required to provide a brief synopsis of his paper.

In this way, it is hoped to provide a very effective program.

The afternoon of Wednesday will be devoted to the operative symposium which, if not changed, will be confined to an earnest consideration of the comparative indications of cast gold inlays, swaged gold inlays and gold foil stoppings in molars and bicuspsids. This limitation will aid in controlling discussions.

It is proposed to continue this session, if necessary, until late in the afternoon and hold no session of any nature on Wednesday evening.

Thursday morning will be devoted to a general clinic and the afternoon to a prosthetic symposium on the timely subjects now being carefully chosen—together with discussions of that day's clinic.

SOUTH DAKOTA DENTAL SOCIETY

The annual meeting of the South Dakota Dental Society will be held in Huron, S. D., June 29, 30 and July 1, 1909. An interesting program has been prepared and a profitable meeting is expected.

RESOLUTIONS ON THE DEATH OF DR. A. W. HARLAN

Whereas: Through the death of Dr. A. W. Harlan, the Odontological Society of Chicago has lost its founder and a former president; one who has been most actively connected with the Society for twenty-five years, whose vigorous personality won for him the respect, admiration and love of his colleagues; therefore, be it

Resolved: That the members of the Odontological Society of Chicago express their profound sorrow at the loss of their associate, and extend heartfelt sympathy to the bereaved family. And be it further

Resolved: That these resolutions be spread upon the minutes of the Society, that a copy be furnished to the dental press for publication, and that a further copy be transmitted to the family of the deceased.

J. W. WASSALL C. N. JOHNSON W. V. B. AMES

The Wyoming Board will hold their examination on the 5th, 6th and 7th days of July, 1909, at the Senate chamber, Cheyenne, Wyoming. All applications must be in the hands of the secretary, together with the fee of \$25.00, fifteen days before the date for the examination. Applicants must be graduates from reputable dental colleges recognized by the N. A. D. E. For further information, address Peter Appel, Jr., Cheyenne, Wyo.

PRACTICAL SUGGESTIONS

MATCHING THE SHADE WITH CEMENT FILLINGS

Make a pellet from each bottle of cement as soon as it is opened, mixing it as though it was to be used in filling, marking it with the number on the bottle. Select from these pellets the shade nearest to that of the tooth and such other shades as may be required to modify it to match that of the tooth. Then place on the mixing slab, each by itself, a portion of powder of each shade. While mixing, take a little of the cement on the spatula and holding it close to the tooth note any changes required, and draw in to the mix a portion of the powder needed to modify the shade. This testing repeated until a satisfactory shade is obtained if done quickly will not unduly prolong the mixing.—T., *Items of Interest*.

USE OF CLASPS

By S. C. G. Watkins, Montclair, N. J.

In making a partial plate, where clasps are to be used, they should be adjusted in such a way that they will not impinge upon the teeth nor the gum nor go straight around the teeth, but should be so adjusted that they will run from the direction of the gum toward the grinding surface of the teeth, with the idea of holding the plate in place rather than pressing it out of place, and adjusted so nicely that they will not bind in any way nor be felt by the patient at all, as though it was intended to hold the plate in place, but rather simply for the purpose of steadying it or catching it in case it should lose its bed.—*Items of Interest*.

KEEPING FLASKS CLEAN

Immediately after removing the case, scrape the plaster from the flask and wash it under running water, using a small, stiff-bristled scrubbing brush, and place it where it will quickly dry. It takes but a few minutes, as at this time the plaster is soft and has but little adhesion to the flask. Later it becomes harder and is more adherent, and moreover, the dirty flask is likely to be forgotten.—T., *Items of Interest*.

A METHOD OF POLISHING NIQUELED INSTRUMENTS

In order to polish niqueled instruments, submerge them for twelve hours in a saturated solution of tin chlorid in distilled water. Then dry the instruments and rub them with a cloth or chamois.—*La Odontologia*.

AFTERMATH

Robberies

April 13.—Dr. Philip A. Traynor, Wilmington, Del., gold valued at \$600 and \$30 in money.

April 17.—Dr. R. G. Cruse, Pocatello, Idaho, gold worth \$35; Dr. Wm. Cureton, gold worth \$35, and Dr. C. E. M. Loux about \$15 worth of gold.

April 21.—Drs. P. P. Musser and Wm. Wadell, Salt Lake City, Utah, gold scraps and fillings valued at \$50.

April 24.—Dr. Wm. Shepard, Alameda, Cal., quantity of gold filling. Effort made to enter office of Dr. N. D. McKean, Alameda, Cal.

April 24.—Dr. J. D. Powell, Sacramento, Cal., gold watch and two gold bridges.

April 30.—Dr. Jacob Bollinger, Nyack, N. Y., gold valued at \$25.

April 30.—Dr. A. H. Speer, Long Beach, Cal., gold valued at \$20.

May 5.—Dr. M. Pepper, Bayonne, Mich., \$75 worth of gold filling.

May 3.—Drs. Lassen Bros., San Francisco, Cal., gold valued at \$15.

Deaths

April 7.—Dr. Henry F. Provan, Boston, Mass., of pneumonia.

April 11.—Dr. W. I. Thayer, Northampton, Mass., aged 74 years.

April 16.—Dr. Joseph E. Talty, Woburn, Mass., aged 25 years.

April 22.—Dr. Alexander Hartman, Murfreesboro, Tenn., aged 82 years.

April 27.—Dr. A. W. French, Springfield, Ill., of pneumonia, aged 88 years.

April 29.—Dr. W. H. Chilson, Appleton, Wis., aged 68 years.

April 30.—Dr. Curtis E. Laird, Des Moines, Iowa.

April 30.—Dr. J. S. McCarrell, Bucyrus, O., of Bright's disease, aged 74 years.

May 2.—Dr. A. S. Condit, Mt. Vernon, O., of paralysis.

May 4.—Dr. Ambrose J. Avery, Sparta, Ga., of progressive paralysis.

May 6.—Dr. Oscar Doyle, Louisville, Ky., of heart disease, aged 64 years.

Marriages

Dr. A. J. McLean, Mt. Vernon, N. Y., and Miss Elizabeth A. Donigan, were married May 6.

Dr. E. J. Wylie, Columbus, O., and Miss Mabel E. Owen were married May 9.

Change of Location

Dr. B. Frank Gray, Orthodontist, formerly of Colorado Springs, Col., is now located in the Mack Building, Denver, Colorado.

Officers Selected

Southwestern Michigan Dental Society elected the following officers for the ensuing year: President, A. A. Welch, Battle Creek; Vice President, R. A. Bowie, Three Rivers; Secretary-Treasurer, C. W.

Johnson, Lawton. Next place of meeting Coldwater, Mich., second Tuesday and Wednesday in April, 1910.

Dentist Killed by Train

While walking along the Louisville and Nashville railroad tracks returning from a fishing trip April 21, Dr. Robert Kenny Bryan, a well-known dentist of Georgetown, Ky., and Spanish-American War veteran, was struck by a train whose approach he did not hear on account of deafness, and was so badly injured that he died soon after being taken to St. Joseph's Hospital without having regained consciousness.

- Commencements** Birmingham Dental College, May 6—14 graduates.
 Atlanta Dental College, April 30—74 graduates.
 Southern Dental College, April 29—38 graduates.
 Ontario Dental College, April 30—68 graduates.
 Texas Dental College, May 5—5 graduates.
 Louisville College of Dentistry, May 6—38 graduates.

Do Not Complain It is so easy to find something that is not right, and the temptation to do so is so great that every one of us ought to make it an invariable rule never to complain of anything unless we, at the same time, can suggest some betterment for it. Let us not get uncomfortably warm about the things that are not right unless we can see some way to make them a little better.—Edmund Noyes, *Dental Review*.

Memorial Window in Honor of Dr. Willmott Dr. J. B. Willmott, dean of the Royal College of Dental Surgeons, was recently the recipient, at a banquet given in his honor by the Ontario Dental Society, of many expressions of warm eulogy and appreciation. Since 1875 he has held that position.

A memorial window, with the crest of the College and, in the center a fine portrait of Dean Willmott, was unveiled. It will be placed in the new building at the corner of College and Huron streets.

Dean Willmott replied modestly to all that had been said in reference to his services, adding that he only wished to be remembered as a man who had honestly tried to do his duty.

The British Dental Association The British Dental Association is making strenuous efforts to modify the anæsthetics bill which was presented to the House of Commons last month. The object of the bill is to prevent the administration of anæsthetics by unqualified persons, and it is proposed to effect this by prohibiting the administration of any general anæsthetic by other than a legally qualified medical practitioner and by enacting that after January 1, 1911, no person may be registered under the medical acts unless he shall have produced evidence that he has received theoretical and practical instruction in the administration of anæsthetics.

Fails to Secure Damages in Action Against Dentist A gentleman in Syracuse, N. Y., wanted \$1,000 damages for alleged injuries received while he was having a tooth extracted. He claimed that he had a fractured rib and that one of his lungs was punctured. No wounds or scars were shown the jury and the defendants denied that the gentleman had been ill treated. A verdict of no cause of action was returned by the jury.

A Veteran Society Member One of the oldest, if not the oldest member of the Iowa State Dental Association in attendance at the recent meeting, was Dr. Gustavus North of this city. He joined the association forty-one years ago when it was but six years old, this being the forty-seventh annual meeting.—*Cedar Rapids Republican*.

Connecticut State Dental Association Elected the following officers: President, Frederick W. Brown, of New Haven; vice-president, Frederick T. Murlless, of Hartford; secretary, Dr. Robert H. W. Strang, of Bridgeport; treasurer, Willford V. Lyon, of Bridgeport.

The Why and How of the Teeth A little booklet containing useful information for the public, prepared by Dr. Charles Askowith, 110 Tremont St., Boston, Mass.

California's New Dental Law Governor Gillett has signed the Bech Assembly bill, which defines the curriculum for those wishing to practice dentistry in California. It is considered a victory for the State Board of Dental Examiners and the graduate dentists of regular schools, who opposed a bill by Senator Hurd, which we mentioned last month, letting down the bars so that ten years' practice and a demonstration would be sufficient proof of the right to a certificate from the State Board. By the signing of the new bill the governor kills the Hurd bill, which was a slur on the dental profession of California.

"California now has as good dental laws as any other state in the Union," said Dr. Ray D. Robinson, chairman of the Legislative Committee of the Southern California Dental Association, in discussing the Bech bill which was signed by the governor.

"There is only one thing more to be desired, and that is a reciprocity provision between the states, which have good dental laws, but we believe that is a subject for Federal legislation."

The Bech bill abolishes apprenticeships and requires every person seeking a license to practice dentistry to be a graduate of a recognized dental college. This provision of the bill does not take effect until May 7, thirty days being allowed for the registration of apprentices who may, after serving four years, take the examination. Such apprentices must have graduated from a high school or have had an equivalent education. No apprentices can take the examinations after 1913.

Provision made to insure the collection of fees. Under the old law dentists were required to pay an annual fee of \$2. That fee was supposed to be compulsory but many dentists neglected to pay it.

Licensed dentists who have neglected to register, are given sixty days under the new law in which to do so. All newly-licensed dentists will have six months in which to register.

Explosion Kills Dentist Dr. William W. Niles, of New York, was at work in his laboratory at the rear of the house when he heard a loud hissing from the boiler, and went into the basement to investigate. Just as he reached the front of the boiler it exploded, hurling him through the air against the stone wall. He was picked up unconscious and taken to the Harlem Hospital, where it was found that his hip and skull were fractured. He died soon after the accident.

Dentists for State Institutions Governor Gillett of California, has signed his state dental surgeon bill. This bill provides for the appointment of a state dental surgeon at a salary of \$200 per month. The dentist is to put in his time traveling among the state insane institutions, of which there are five, and attending to the dental needs of the inmates.

Eastern Indiana Dental Association The Eastern Indiana Dental Association, after the selection of Cambridge City as the next meeting place, elected officers as follows: Dr. Charles Niese, of Cambridge City, president; Dr. C. C. Miller, of Plainfield, vice-president, and Dr. O. A. Martin, of Richmond, secretary-treasurer.

Southern Minnesota Dental Society Elected the following officers: Dr. C. E. Conley, of Le Sueur, president; Dr. H. C. Beise, of Windom, vice-president; Dr. C. P. Peterson, of Mankato, treasurer; Dr. C. A. Hintz, of Springfield, secretary.

Massachusetts dental examinations—56 candidates, 19 successful.

Reappointed on Dental Board Gov. Davidson, Wisconsin, has reappointed Dr. F. H. Tate, Rice Lake, Wis., to succeed himself as a member of the State Dental Board.

Do not Display Instruments

An accumulation of burs, pluggers and small instruments of various kinds deposited and left on the operating table may seem, in the mind of the dentist, to give the impression to the incoming patient that he is a busy man, yet one sight of the collection is often disgusting to a refined man or woman, accustomed as they are to a clean and orderly condition in their own homes. Better that you remove the instruments used on a previous patient, and clean up adjacent to the dental chair before allowing the next patient to enter the operating room. Patients will more willingly pay a liberal fee, if they see that the surroundings are clean and wholesome, and that they stand in no danger of coming in contact with germs or disease.—*S. Parsons, Dental Brief.*

Benzine or Benzene

Benzine is a liquid which passes off at a temperature of between 120° and 150° C., in the distillation of petroleum. It follows naphtha, which passes off between 80° and 120° C.; it is often called naphtha, and sold as such. It is followed by kerosene, which passes off between 150° and 300° C. Benzene is a hydrocarbon produced in the distillation of coal tar. It is one of the most valuable of the coal tar products, as from it many dyes and valuable chemicals are manufactured. You should correctly spell the one you wish to use. They are not alike, and should not be confused with each other.—*Scientific American.*

A Family of Dentists

Dr. F. J. Moyer, Jr., of Lockport, N. Y., writes as follows: In your *Aftermath* some months ago, I noticed a short article entitled, "A Family of Professional Men." Now I want to state that we think we are the largest family of dentists in the world. Father and four sons, all practicing. Dr. B. A. Moyer, Dr. H. H. Moyer, Dr. A. R. Moyer are at Niagara Falls, N. Y., while Dr. F. J. Moyer, Sr., and Dr. F. J. Moyer, Jr., are at Lockport, New York, making five dentists, all practicing in the same country.

Mistake to Curtail Equipment

Many men are making the biggest mistake of their lives in that they curtail the equipment of their offices. There is no money so well spent as that invested in good instruments, and in apparatus of any kind to further your operation. It will bring you business and give you the chance of doing again as much, if not five times the amount in the same time, and, besides, it is saving your vital energy.—*F. T. Van Woert, Items of Interest.*

Gold Medal Awarded

The New York State Dental Society has awarded to Dr. Matthew H. Cryer, of Philadelphia, a gold medal for scientific research. Dr. Eugene S. Talbot, of Chicago, the winner last year and who was not present at that session was given his prize. Dr. Benjamin Nash, of New York, was elected president, and Dr. Cook, of Syracuse, vice-president. The remaining officers were re-elected.

Was Loyal to Home Industries

A surgeon in a western town, engaged to perform an operation of minor character upon a somewhat unsophisticated patient, asked him if he were willing to have only a local anesthetic.

"Sure," replied the other; "I believe in patronizing home industry whenever you can." And he meant it.—*Lippincott's.*

OUR OPINIONS AND OTHER THINGS

DENTAL EDUCATION FOR THE
MASSES

I have been especially interested in the paper by Dr. George Zederbaum, which, has appeared in recent numbers of *The Dental Summary*, upon "The Education of a Nation." I believe that the pages of dental journals during the past decade have presented nothing of more vital import to the profession, and I wish to compliment the *Summary* upon its editorial discernment.

What better evidence could be desired, pointing out the necessity for the education of this particular nation than the experience related by Dr. Zederbaum concerning the editor of the monthly journal for women?

In connection with this subject you have hit the nail squarely on the head in the publishers, section of the May *Summary*, in the paragraph upon ethical conduct.* Not enough thought has been given to the well known fact that only a small percentage of the eighty million people of the United States have any knowledge of the inside of a dental office and never encounter a dentist or the lessons dentistry teaches. It is unquestionably a fact that a misconception of ethics is responsible in a large measure for the ignorance that prevails among the mass of people.

This does not necessarily mean that the ethical man must advertise, but it does indicate that he should find means of letting the general public know some of the things ethical dentists have accomplished by their years of research and study, and the dangers, if not vital results, that follow the neglect of oral hygiene.

There are many ways of disseminating this knowledge. It is an easy thing to put salt on the tail of the bird you have caught, and the dentist who does not thoroughly inform his patient of the necessity for frequent inspection and especially of the attention required by children, is guilty of criminal neglect. But what of that overwhelming majority that do not come within range of the dental profession's salt? Will it be a comfort to them to learn when too late, what might have been? How will you reach those mothers, and mothers to be, who are ignorant of the requirements of the coming race?

*Ethical conduct within the ranks of the profession is a most commendable thing, but when the practice of ethics becomes a mere sentimentality, it often stands as a bar to progress, degenerates into mere old-fogysm.

The most lasting work is that accomplished among the mothers. The inspection and instructions given school children, recently instituted in several cities is a move in the right direction, but the interest and vigilance of the mother is necessary to make the innovation effective among those who most require enlightenment.

There is no better way, ethics to the contrary, notwithstanding, of educating the public than by exploiting the preservative art in its various forms, through the daily press, magazines and brochures. If some of the unethical dentists convey improper impressions to the public mind, and we are sincere in saying that the public should be educated, is it not necessary to adopt channels for the promulgation of truth that will reach the same field?

I have on several occasions suggested to officers of State Societies, what appeared to me to be pertinent reasons why an active committee, styled either "Public Education," "Publicity," "Public Press," or whatever title would hurt the least, be appointed to get busy. In every instance the suggestion was pronounced to be sensible but questionable from an ethical standpoint.

Ethics are not taken quite so seriously by the medical profession. Popular literature is filled with papers prepared by, or under the supervision of medical experts on various subjects. You can secure treatises in many forms on tuberculosis, cancer and other subjects, written to be understood by the lay mind. Would it be less ethical for the dental profession to lend similar aid in educating the public on such subjects as pyorrhea and other forms of dental disease? It has not been my good fortune to see anything of the kind written for the general public, except a few pamphlets issued by unethical practitioners. I have some of these pamphlets that deserve the highest praise from an educational standpoint, and were the personal references to the advertiser eliminated, would pass muster anywhere as valuable texts upon the subjects considered.

I hope the *Summary* will go on with this good work, which has been so well begun and conduct the campaign so vigorously that it will shake out of the rut those practitioners who obtain a diploma and fold their arms awaiting aching teeth to bring them practice, overlooking the fact that the door knob and string is still a strong competitor with their diploma.

Very truly yours,

W. L. TRUESDELL.

AMONG THE MAGAZINES

In the middle of April the price of wheat rose, after some weeks of spectacular advances, to war and famine figures. Millers actually in the Kansas wheat belt were forced to pay \$1.50 per bushel. The Liverpool market recorded the highest price in thirty years. The Chicago price of \$1.29¼ for wheat to be delivered in May has been exceeded only five times since the period of our depreciated currency. The exciting cause of the advance was the speculation by Mr. James A. Patten, of Chicago. Back of the manipulation by speculators was a short crop in the Argentine Republic, which reduced the amount of wheat that could be exported to Europe, the large needs of Europe itself, her short acreage and, probably, the small supply of wheat on hand in the world, left over from last year's harvest. Getting a sense of this coming situation last fall, Mr. Patten bought during last winter and this spring some 20,000,000 bushels of wheat to be delivered in May, paying, probably, not much more than \$1 per bushel. At the same time opposing speculators, who had not a correct sense of the situation, were selling "short" wheat for May delivery, as the price successively rose to figures which seemed to them more and more unjustified. When the short sellers became frightened at the apparent correctness of Mr. Patten's theories, and attempted hastily to buy in enough wheat to carry out their sales, the pyrotechnics of April resulted the more rapidly because of the farmers' unwillingness to sell until the top of the rising prices were reached.—From "The Progress of the World," in the *American Review of Reviews* for May.

WHAT WILL MR. TAFT DO?

A contributor to "The Pilgrim's Scrip" in the June *American Magazine* says:

"I wish that the question did not insist on popping up its head. I would prefer to have no shadow of doubt about what he will do. I want to think that Mr. Taft has no more use for Mr. Cannon than I have, and that he rejoices as I did that Mr. Aldrich is to retire to private life. I should like to believe that he had no more sympathy with the group of free and near-free senators than he had with the Aldrich-Elkins-Penrose combination, that he would rather see an insurgent than a stand-patter. But it does not look so just now in Washington. The two most frequent callers at the White House are Messrs. Cannon and Aldrich, and the faithful are taking their cue from them. It looks very much as if the day of reaction had come. That

its headquarters were at the Presidential mansion.

"Mr. Taft's present relations are of infinite importance because upon Mr. Taft's present advisers depends the kind of tariff bill the country is to get. He is pledged to an honest revision downward—to a revision which cuts duties on the necessities of life, and that means one which first of all, I should say, gives the average man cheaper woolen garments—which the Payne bill does not do—to a revision which gives him the advantage of free hides—free lumber—free iron ore—which the Payne bill does do, but to prevent which the usual raid has been organized. What will Mr. Taft do? Will he in the interests of party peace—and dishonor—compromise on the downward cuts—let the swindler stand, overlook the jokers which are hidden in the schedule jungles or will he veto any bill which is not likely in the interest of the average man?"

The student of sociology must be impressed by the facility with which ideas and fundamental beliefs are changed to suit the changing times. Ethics consist merely in a set of rules, or a system of philosophy, made to justify and enforce upon others certain manners and methods of doing things that seem to us best suited to the demands of the times. The immoral today may become the highly virtuous tomorrow. It is, therefore, well occasionally to consider our varying points of view, examining motives and aims, in order that our habits of thought shall not fall into the rut of mere use and wont, doing from habit only the things that are worthy of a higher impulse and a nobler aim.

If you are interested in irrigated land projects, dry farming, fruit culture, cattle raising, general farming, or if you want to know something about the commercial growth of the West, send 25 cents in stamps for three recent issues of the best magazine in the west. Address *The Pacific Monthly*, Pacific Monthly Building, Portland, Oregon.

If our readers really care to know something about the inner workings of American politics let them secure a copy of the May number of *Human Life* and learn how Philander J. Knox became attorney general of the United States. As those who "know the ropes" are said to make the best detectives, once their feet enter the path of rectitude, so, it may be supposed, a bolsterer and adviser of trusts may, by reformation and regeneration, become a shining instrument for their prosecution and regulation.



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To Correspondents: Send communications, exchanges, books for review, etc., intended for the Editor of Dental Summary, to Dr. L. P. Bethel, 1255 Neil Ave., Columbus, Ohio. Subscriptions and advertisements, send to the publishers.

THE RANSOM & RANDOLPH CO., TOLEDO, OHIO.

I have found that inlays cast for cavities in the approximo-coronal surface of the bicuspid when prepared by the old method will lack to a considerable degree seating at the gingival border. This observation has been made by numerous other operators and has been accounted for to a considerable extent by the theory that gold shrinks on cooling, but my observation has been that the shrinkage of the gold will not account for the misfit of the



Fig. 1



Fig. 2

inlay. Again, the floor of the cavity has been left rough and the inlay will not seat because these same indentations are not perfectly reproduced in the casting as the very sharp edges are rubbed off by the molten gold as it flows into the mold.

Figure 1 represents a cavity in the molar surface of a lower molar.



Fig. 3

You will note that all of the angles have been removed from the cavity margin and axial walls and that the floor is perfectly smooth and flat. Note also that the margins are very slightly beveled from within outward, so as to allow a narrow lap of the gold at this point, preventing the pumping out of the cement during mastication. If the cavity was left with sharp angles where the fissures cross and an inlay cast for the cavity, it would not seat or fit, because the sharp angles in the investment would

not be reproduced in the inlay for reasons heretofore stated. This would not be true if we had an investment sufficiently hard to withstand the friction of the molten metal.

Figure 2 represents a cavity in the mesio-coronal surfaces of the bicuspid. Note that the neck of the retention step has no sharp angles to be knocked off by the molten metal flowing into the mold. Note also that where the step joins the axial wall that the sharp angles have been rounded with a stone. If we use curves instead of angles at these points the inlays cast to fit such cavities will seat perfectly.

Figure 3 represents a compound cavity in a bicuspid correctly prepared. Note the sweeping curves and the absence of acute angles.

IN GENERAL.

If cavities are prepared with small carborundum stones instead of burs there is less liability of producing angles and rough floors, and inlays cast to fit cavities thus prepared have smoother surfaces on the side next the dentin.

SOME PRACTICAL POINTS ON TAGGART INLAYS

By L. E. Custer, A. M., D. D. S., Dayton, Ohio

CONDITIONS NECESSARY FOR UNIFORM CASTING.

FIRST thing necessary is an investment—a material which will neither shrink nor expand and which will withstand a high heat.

For this purpose I have used a material composed of plaster of paris, one part, and highly calcined fire-clay, four parts. This possesses two advantages over plaster and silex. The fire-clay having been burned at a much higher heat than that used in casting, does not shrink during the latter act. It, moreover, possesses a valuable feature over silex. If silex is examined under a microscope it will be found to present a smooth glass-like fracture, whereas the fire-clay particles present a rough and somewhat porous surface. The advantage is obvious. The plaster ingredient in the mixture should always be as little as possible and a mix of fire-clay and plaster will contain less plaster for a given strength than a like mix of plaster and silex. A cubic inch of the above when brought to a red heat will shrink scarcely a thousandth of an inch, therefore the shrinkage of the average inlay mould would only be about one-fifth of that—too little to worry about.

The second factor is the condition of the mould at the time of casting. It should be thoroughly dried and raised to practically the same heat each time before casting. If the investment has not been thoroughly dried out steam will form at the moment of casting and prevent perfect filling of the mould. It is important to heat the investment quite hot so that any decomposition of the plaster will have taken place. If the gold is cast into an investment which may have been dried out, but which has not been heated up quite well, a slight decomposition of the plaster is

produced at the moment of casting and an imperfectly filled mould is the result. An incidental advantage is also found in casting in a hot mould—the gold need not be heated so hot as where it is cast in a cold mould.

It is important to always heat the gold to as near the same degree as possible. Theoretically, it should be fluid till every recess of the mould is filled, and yet not so hot that it remains longer in a fluid state. Unless the gold quickly solidifies after being cast, although the case may have been dried and well heated, the plaster will liberate gas under melted gold and an imperfect filling will result.

The gold should be cast under the same pressure each time. There are practically only two methods of casting—compressed air and centrifugal force. When compressed air is used (steam and gas come under this head) it is important to always have a good surplus of gold so that the edges may be sealed by the weight of the fluid gold, otherwise air will leak under the gold and ruin the casting. The surplus gold in this case, especially where the basin is quite saucer-shaped, does not affect the force with which gold casts as much as where centrifugal force is used. There is no reason, therefore, unless one is hampered by a poor heat, why a good surplus of gold should not be used when casting under compressed air. Where centrifugal force is employed as the casting agent the conditions are different and here it is especially important to use about the same amount of gold each time, allowing only for the difference in the size of the fillings. Having once ascertained what amount of surplus gold insures a perfect casting under a given centrifugal force those conditions should be repeated as nearly as possible. The mould is easily distorted by too great a head of metal or by too high centrifugal speed.

APPROXIMAL CONTACT.

No feature is so important in approximal fillings as the contact. Heretofore, this has been difficult to secure in malleted fillings, but with the cast inlay it is quite easy, and if the cast filling had no other points of advantage this would be one to recommend it. The wax filling, unless there has been ample room for its finishing, will show a small facet where it touched the neighboring tooth. This should be rounded out with wax, or, as I prefer, after casting, to flow a small bit of 22 karat gold upon the facet, thus contouring it out with hard gold at the point of contact.

DO NOT DEPEND TOO MUCH UPON THE ADHESIVE PROPERTY OF THE CEMENT
TO RETAIN THE FILLING.

There has always been too much faith placed upon the retaining property of the cement. In order that the operation may be facilitated the walls in many cavities that might be prepared almost parallel are quite funnel-shaped in principle. This should not be. Where thin walls surround the cavity it should be kept in mind that these do not serve

well to retain the filling and unless these walls are protected upon the masticating edge they will soon spring enough to break up the cemental attachment. We are prone to gauge the retentive property of a cavity by its inside form. We seldom take into consideration the thickness of the cavity wall. The loss of many fillings is due to placing too much dependence upon frail walls.

CEMENTING.

If you examine a metal inlay that has come out, as a rule it will be found that the cement has broken its attachment with the tooth substance and is still adhering to the gold. This was probably due to imperfect drying of the cavity at the time of setting. The cavity walls should be thoroughly dried to insure adhesion of the cement thereto. This adhesion can be very much increased by wiping the cavity out with a little of the cement liquid and drying just before setting. This seems to prepare the surface for a stronger adhesion of the cement. We have seen the cement cling to the instrument rather than to the cavity walls at times. This is due to faulty drying out of the cavity. If it is difficult to secure the most perfect dryness it is all the more important to use the liquid method before setting.

METHODS OF CASTING IN CROWN AND BRIDGE WORK

By W. G. Crandall, D. D. S., Spencer, Iowa

ALL CAST CROWN.

IT is possible to cast an entire gold crown and it is at times practical. It makes a piece of work that is heavy, expensive and difficult to handle.

It is always necessary to have a tooth perfectly trimmed of all enamel before starting to make a crown. It is absolutely essential that there be no overhanging wall of dentine.

If the tooth has one or more walls of dentine, build it up with amalgam so that the walls slightly converge toward the occlusal. Next give the surface a finish with strips or disks. The casting wax may be applied directly over the prepared tooth if the operator is skillful enough to carve and finish while in position. This is not an easy thing to do unless the gum has previously been forced out of the way to give access for convenient finishing about the root.

The easier way is to take an impression with guttapercha, metalline, modelling compound or cement. With a burnisher work the impression material close about the root, being sure that the impression is perfect. Do not allow the impression to interfere with occlusion. When the impression material is thoroughly hardened take the bite with modelling compound or wax, bringing away the root impression in position in the bite material.

The root impression should be coated with some separating material and then filled up with cement; either build down quite long or rough so

that it will be held firmly in the plaster model or insert metal pins for that purpose.

The case is now ready to place in crown articulator and pour up with plaster.

When hard, remove the bite and impression and you have an exact reproduction of the tooth, approximating teeth, occlusion and surrounding parts.

Either wet or oil the model, then proceed to melt on the casting wax a few drops at a time and carve to form. It is possible to give form to a crown in this manner that it would be very difficult or impossible to form



Fig. 1a

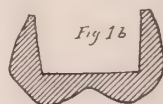


Fig. 1b

with contouring pliers. A fit beneath the gum line may be made as perfect as that of any inlay and this is more than can be said for most gold crowns.

A most perfect fit at the gingival line may be made by cutting a seat at right angles to the long axis of the root upon the mesial and distal surfaces just beneath the free margin of the gum (Fig. 1) and finishing the crown flush with this line.

The possibilities of the contacts and contours are limited only by the variety of cases and the skill of the operator.

CAST CUSPS.

In making cast cusps for a crown the band should be made in the

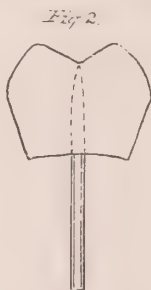


Fig. 2

usual manner, paying very little attention to contour. Take bite or impression in the usual manner and place on the articulator. A thin film of wax within the band at the gingival portion will facilitate its removal when upon the model.

The root model may be built down with plaster so as not to leave room for too great a thickness of casting wax and a subsequent thickness of gold. The wax can be melted over the surfaces of the band, giving buccal, lingual and approximal contour with precision. The occlusion can be tried and carved to an exactness.

The waxed up model of either variety of crown should be thoroughly trimmed and smoothed (gasoline or chloroform is good for this purpose) so that none of the contour need be filed or polished away.

The sprue wire should be inserted into the wax of the occlusal portion within the crown (Fig. 2). This is important when casting upon bands, as will be seen later.

In investing these crowns they should be placed as near the surface of the investment as the strength of the investment will allow. It must be remembered that the occlusal surface of most crowns is quite a large surface and there must be sufficient investment material to warrant a resistance to the molten gold when it is thrown against it. It has been my experience that a depth of from 3 to 5 m. m. should be allowed for sufficient strength.

After the investment material has become sufficiently hard (15 to 30 minutes will suffice for most investments) the sprue wire should be removed and the case inverted over a flame that will melt and burn out the casting wax. When the investment becomes red with the heat it should be inverted and heated until the investment can be seen to be at a white heat through the sprue hole. This is important for the gold will not fuse to the band unless it is well heated. A failure will be unknown if the case is thoroughly heated and properly cast.

If a taper pointed sprue has been used, the crown when cast can be easily separated from the cast sprue by twisting in the fingers. A separation can be had at just the right point if care has been used in placing the sprue in the wax and an excess of wax not allowed to adhere to the sprue. Any excess remaining can easily be cut out with a bur or small stone.

A crown made after this method will need very little polishing to produce a beautiful result, providing care has been taken in every step.

The Richmond Crown is practical upon any of the teeth that will admit of a sufficient length for the porcelain facing.

BRIDGE-WORK.

We will suppose that the gold crown we have just cast is for the upper left first molar, the two bicuspids are missing, the bite is very close and we want to place a Richmond crown upon the left cuspid and bridge the space.

Before making our Richmond crown we will trim the root a little differently than the usual custom. The labial half of the root end is beveled beneath the gum line with a root facier and stone as for a Logan crown. The lingual half of the root end will not be beveled nor cut down to the gum line, but will be cut flat, making a good seat for the crown. The enamel should now be thoroughly removed from the root (Fig. 3).

An iridio-platinum wire about 16 gauge is fitted to the canal and left protruding from the root end about 2 m. m. A suitable facing is ground to position allowing room for a gold tip for the protection of the facing. The pins should be bent so as not to interfere with occlusion or the contour of the crown.

A piece of casting wax of sufficient size should now be softened, or better, melted upon the back of the facing, approximating the shape of a crown, and the root pin inserted. This, while soft, should be forced upon the root, the facing adjusted to the desired position and occlusion carefully noted. The wax should be tightly burnished about the root with cold burnisher. After thorough adjustment, chill and remove for careful trimming. Casting wax that is sufficiently hard to admit of handling and trying in the mouth without danger of changing form, should be used. When the desired form is secured and the wax smoothed the sprue wire should be inserted in the wax upon the lingual surface of the crown at right angles to the back of the facing.

Great care should be taken that no wax extends over the labial, mesial or distal surfaces of the facing as this would be liable to cause a check in casting.

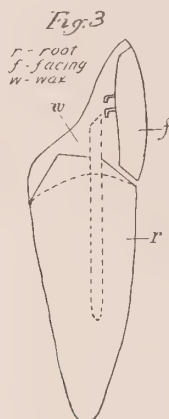


Fig. 3

This arrangement places the facing in the position to receive the most possible heat in the investment. The investment should be made the same as for the gold crown, the wax melted out, the case inverted and heated slowly at first, gradually increasing the heat to the extreme, so that when the hot gold is cast upon the facing there will not be enough difference in temperature to cause sufficient expansion to check the facing.

The moment the cast is made and the gold has hardened the case should be covered with dry plaster and left until thoroughly cool. Most of the failures in casting onto facings have been due to rapid cooling. Powdered plaster will keep the case warm for about a half hour or more and it is time saved to leave it plenty long enough.

A crown made carefully after this method should go to place on the root as perfectly as any inlay and if properly finished should never become an irritant to the gum tissue.

To complete our bridge we will place the crowns in position and take accurate bite and impression. This is easily done with plaster on the

Detroit bite impression tray, bringing the crowns away in position and allowing no chance for change of bite.

The inside of the crowns should be coated with a thin film of wax and the case mounted in plaster on the articulator. Separate and warm crowns sufficiently to melt wax and thoroughly clean out all wax so that crowns rest perfectly in position.

Bicuspid facings are now ground and fitted, casting wax applied to them, and while warm they are placed in position and the articulator closed and worked about as in chewing. Now carve cusps and trim wax as you want the bridge when finished. Use great care that wax does not overlap the facings in any position. It should cover the same portion of the facing as you would include in backing a tooth for soldering. The case should be invested and cast the same as the cuspid crown. It is now ready for assembling. This is not done in any way different from the ordinary procedure with the exception that very little solder is necessary.

This makes a bridge that is nearly perfect hygienically. There is no space between the facing and gold as with ordinary backing, there are no solder pits to cause trouble in finishing. The crowns fit like inlays, allowing a minimum of cement which we all know is the foulest of substances when removed from an old crown.

The color of the gold should be uniform, the same kind of gold being used throughout.

In casting anterior cases where it is desirable to have the case thin linguo-labially, I would suggest clasp metal. Though difficult to melt sufficiently to cast, it gives the maximum of strength and rigidity for its bulk.

If it is desirable to have the facings removable the backs of the facings should be oiled and the pins left straight. After the waxing up has been completed, remove facings and place sharpened pencil points in the pin holes, having the points long enough for the investment to hold in position for casting. Facings can be easily adjusted and cemented to position after bridge is completed.

Another good method for making facings removable and a strong attachment when in position, is done by bending the pins down on the facing so they lap, and as close together as possible. Then cover with soft solder or some of the easily fusible metals. Grind this into a box form just so that it can be withdrawn from wax without pulling. This makes a very strong attachment and is easily and quickly made.

GOD loves us with a masculine love and turns us loose to injuries and indignities. He takes delight in seeing a brave man wrestling with evil fortune, and yet keeping himself upon his legs, when the whole world is in disorder about him.

—Plato

SOME PLACES WHERE THE CASTING PROCESS HAS BEEN FOUND USEFUL

By E. T. Tinker, D. D. S., Minneapolis, Minn.

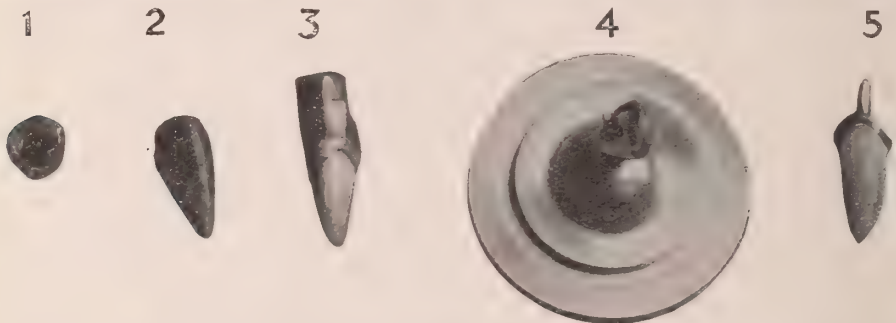
IN the following article it will be my endeavor to give you a few applications of the casting process.

The first of which will be a method of casting a coping for a Richmond or Porcelain crown, where it is necessary to re-produce the entire enamel margin as in cases of split roots, roots that have been supporting crowns and through improper preparation are causing gingivitis, as well as many other cases that may come under our care.

CASTING A COPING FOR RICHMOND OR PORCELAIN CROWN.

In brief, the procedure is as follows:

Before removing all the enamel and beveling the root, take the measure and make band of 22k-30g gold plate, contouring and roughly fitting same (Fig. 1). Prepare the root as in Fig. 2; place the band in position and force softened casting wax to place (Fig. 3). The band being slightly larger



Figs. 1, 2, 3, 4 and 5

than the root acts as a matrix, forcing the wax in direct contact, the free margin of the gum determines the depth to which it shall go. Trim away all surplus wax, warm an iridio-platinum pin and force through wax into the canal, attach the sprue and remove band, wax and post intact, mounting same on crucible former (Fig. 4) and cast. By the aid of stones and disks, dress down and polish, leaving a finished coping (Fig. 5), which is very strong and one to which the gums take kindly.

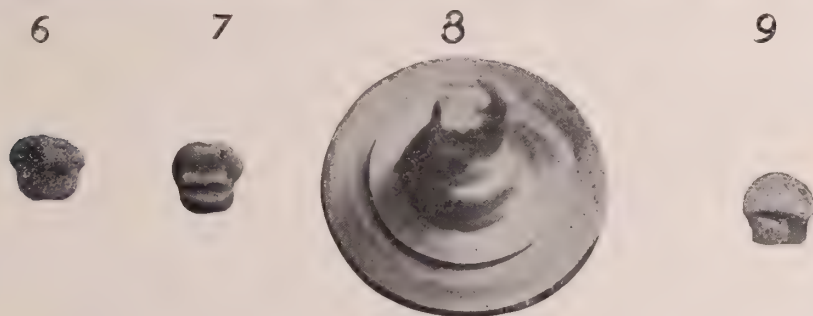
I was very much interested in reading Doctor Kabell's article* in the May number of "Items of Interest," from the fact that it brought out the same difficulty which some of my friends as well as myself have been having with the shrinkage of gold when cast.

TINFOIL TO CONTROL SHRINKAGE IN CASTING.

Through the courtesy of Doctor H. A. Knight, I will give you his method of using tin foil to control the shrinkage in casting boxes for porcelain bi-cuspid and molars when used as dummies for bridge work. Take a common pin tooth, molar or bi-cuspid, cut off the pins and grind it as is shown in Fig. 6 and 7: Fig. 6 showing it from the occlusal and Fig. 7

*Extracts from this article will be found on another page in this issue.—EDITOR.

from the gingival point of view. Take a sheet of casting wax and adapt some very thin tin foil over one side of it. Warm the wax and press to place, having the tin foil next to the ground surface of the tooth and carve as you wish the finished piece. Attach the sprue in some convenient place, chill and using sprue as a handle, remove wax and foil from the tooth, chill again and with a pair of small pliers grasp the foil by some small projection and separate from the wax (Fig. 8), being careful not to



Figs. 6, 7, 8 and 9

distort wax form, invest and cast. The space gained by the foil will just about compensate for the shrinkage of the gold, the tooth slipping to place without further grinding (Fig. 9).

GINGIVAL MARGIN RESTORATION.

Another place where difficulty is often encountered is at the gingival margins in large M. O. D. inlays. Doctor F. B. Kremer, of this city, suggested that in cases where we have an otherwise perfect inlay, that we grind away a part of the defective margin (Fig. 10), placing a little inlay wax and forcing inlay home over it (Fig. 11). Remove inlay and wax



Figs. 10, 11 and 12

intact, casting anew, which gives a very good result (Fig. 12). This idea has been carried out in a good many different ways, for instance where a margin of a cavity containing an otherwise good inlay has become fractured, or where a root has become affected by caries under a well made Richmond, the defective parts of tooth can be prepared, wax placed over them and the old work pressed to place, removed intact and cast, producing practically a new piece of work. Numerous other conditions will present themselves to which this idea can be applied advantageously.

CAST GOLD CROWN.

For contact, contour, occlusion and perfect relation to the root and

gums, the gold crown made by the following method comes as near the ideal for posterior teeth as anything I have as yet found. Prepare the root along the accepted lines, construct a gold band of 22K-30g plate and accurately adjust to the root and gingival, paying no attention to contour as that will be taken care of later. Obtain a bite of occluding teeth in wax and an impression of band and teeth mesially and distally in plaster. Remove band and place it in impression. Make models and mount on an anatomical articulator, oil all plaster adjacent to band, place warm casting wax in band and close the articulator, giving it a lateral motion as in mastication, so as to produce a correct occlusion, and carve. With a camel's hair brush paint melted wax on exterior of band and carve contact points and contour. Remove from model, invest and cast and when finished it will be found as near anatomically correct as any which have so far been made, and its one great advantage lies in the fact that by not contouring the band, we do not take the risk of disturbing its relation to the root, the perfection of which we are all aware is the cardinal point in the construction of any crown, the health of the surrounding tissues and the life of the operation depending almost wholly upon it.

PORCELAIN AND GOLD INLAYS.

By A. W. Starbuck, D. D. S., Denver, Colorado.

Superintendent of Infirmary Colorado College of Dental Surgery.

(Continued from page 426 June Summary.)

THE WAX PATTERN.

IN considering this step in inlay construction, it is important that we first consider the material we are to work with. There has been almost as many makes of wax thrust upon the profession as there has been casting machines, and the majority are absolutely worthless. The fact of the matter is, our best base plate waxes are far superior to the majority of inlay wax offered for sale.

The important feature in an inlay wax, is to have one with the least possible amount of inorganic material present. In other words, one that can be completely destroyed by moderate heat. The next essentials are, tenacity, close grain and rigidity when cool. The ideal wax should be one that could be softened and formed in a cone with dry heat and when soft should work like chewing gum. When forced into the cavity it should not crack or crumble, but mould to any form desired, either with the use of the fingers or instruments. After chilling, it should carve easily and take on a high polish.

When making the wax pattern, the tooth should be slightly moist to prevent the wax sticking. Warm the wax until it is like putty, shape in the form of a cone and force into the cavity with the thumb and finger, compressing the wax as much as possible with the fingers to insure perfect adaptation to the walls of the cavity. In approximal cavities an excellent

plan is to use a heavy piece of dam, placing it between the teeth, first allowing it to rest against the approximating tooth until the wax is forced into the cavity, then with considerable tension upon the rubber, force the wax to place in the cavity. With flat burnisher, working from the center of the cavity towards the margins, work down smooth and at the same time remove the excess. The wax should be as near as possible the exact contour desired in the finished inlay, having no more of an excess over the margins than the thickness of paper. After getting as smooth as possible with the burnisher, polish with a pellet of cotton or a soft tape passed between the teeth.

Great care should be used in the removal of the pattern. It is best not to attempt the insertion of the sprue until the pattern has been removed, as many times it would be impossible to attach at the most advantageous point. With gentle pressure upon the labial and lingual surface, using a small pellet of cotton in the cotton pliers, loosen the pat-



Fig. 72

tern. The greatest care should be used in its handling, after it has been dislodged, as the margins are thin and easily bent out of place. A very convenient receptacle to allow the pattern to drop onto, from the cavity, is a large sized mouth mirror frame, one that has the glass broken away and replaced with a thin layer of cotton. As soon as removed, the sprue should be attached and the pattern covered with a thin layer of investment and should never be permitted to lay around, even in water, for some future time to invest.

In bicusps and molars after forcing the wax to place in the cavity, have the patient close his teeth and move the jaws laterally, in order that the occlusal surface may be as near perfect as possible. After trimming down the approximal portion and smoothing as much as possible, have the patient close again to make sure the wax has not been misplaced in the smoothing process.

A careful examination of normally occluding teeth will show the fissures and sulci of the tooth extend deeper than the tip of the occluding tooth. So we should carve the fissures slightly deeper than the impression made by the occluding tooth. A very good tool for this purpose is a small pointed lancet, or in many cases the ordinary hook scaler is excellent.

After shaping the occlusal surface the occlusion should be again tested to make sure the wax was not misplaced in carving.

At this point it might be well to mention the use of iridio-platinum pins as anchorage. In many cases it is not only difficult to get the wax into the pits but it is uncertain about their casting and lack of strength when cast, so a much better method is the use of pins. An iridio-platinum wire, about 20 gauge, is preferable for incisal anchorage, and 16 gauge for anchoring single inlays in root canals. If the inlay is to be used for bridge retention, 14 gauge square wire should be used. In getting the

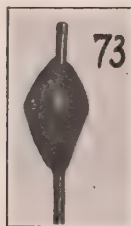


Fig. 73

pattern for an inlay where 20 gauge wire is to be used for incisal retention, it is best to force the wax home in the cavity first, then beat the pin slightly and push it through the wax into the pit.

In using pins in the canals, it is better to shape the wax in a cone around the pin before inserting into the cavity, having first shaped and bent the pin to conform to the cavity and canal.

In an inlay to be used as an abutment for a bridge, a square 14 or 16

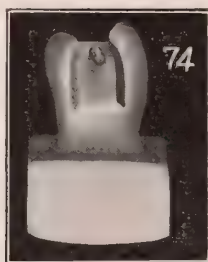


Fig. 74

gauge iridio-platinum pin should be used. The pin should extend into the canal at least the length of the crown of the tooth, and should be bent at right angles and extend beyond the contour of the tooth sufficiently to insure thorough union with the dummies of the bridge.

The writer does not believe a soldered union direct with an inlay is good practice. In the first place our solders lack strength and consequently in order to get sufficient strength it is necessary to use such a large quantity of solder that we have destroyed our self cleansing margins. By using the heavy iridio-platinum union, all margins can be

made self cleansing without weakening the bridge. If we are using a vital tooth as an abutment, it is a question in the writer's mind if it is good practice to attach the inlay direct to the bridge, unless the extension is very large. A simple approximo-occlusal cavity in a bicuspid should never be used in this way. If the cavity is a mesio-occluso-distal, it may prove satisfactory, but the inlay should always be constructed with the use of an iridio-platinum wire, as shown in Fig. 75.



Fig. 75

If a simple approximo-occlusal inlay is used for anchorage it is not well to make a solid union to the bridge, but instead, the iridio-platinum bar should rest within a tube and set in the inlay. This is easily formed by shaping a piece of platinum plate over the wire to be used, and this set in the wax in the region of the contact point. This method allows a certain amount of movement which is always present during mastication, and prevents dislodgement of the inlay.

In attaching the sprue, care should be taken to attach at such a point that the gold will be forced as near as possible towards all margins of the inlay. If this precaution is taken the defects, if any, will not be at the margins but some place upon the surface of the inlay where it can be more easily repaired.

(To be continued)

A COMBINATION CAST CROWN

By O. H. Simpson, D. D. S., Dodge City, Kansas

THE all-cast crown has about as many objectionable features as either the seamless, or cap and band crown, and it occurs to me that by combining the two processes a much superior crown can be made.

In the all-cast crown it is practically impossible to get band below margin of gum without an element of guess work, besides the band is apt to be clumsy and has little or no tensile strength, which renders it unfit for support of bridge work. If it were not for the fact that the seamless is less angular in form than the average cap and band crown, also the absence of the solder line, there would never be a seamless crown used.

The ease with which the band can be adapted to the root makes up

in a great measure for the difficulty experienced in getting a graceful union between cap and band. If any extensive reinforcing is done there is always more or less risk connected with the process, and besides, it is difficult to get the thickness where it is most desired, and the solder is apt to shift at any subsequent heating of the crown.

Most of the objectionable features can be overcome by cutting the band wide enough to articulate edge of band with the opposing teeth. Place band on root, festoon and adapt band to circumference of root. The band is readily articulated with opposing teeth by having patient open and close the mouth a few times, thus showing where to trim away the band. Be sure to leave band on the buccal surface as long as the cusps of the adjoining teeth, as the distinct feature of this way of making a crown is, that the band and cusps are made continuous, doing away with the solder joint between cusps and band. The cusps can be made any length or form by cutting notches in band and contouring with pliers, as is shown in Fig. 1.

The band being longer it furnishes the operator a better opportunity



Fig. 1



Fig. 2



Fig. 3

to contour than the old style of narrow band. Place band back on root and readapt to proximal teeth. If it is a short stump, partly fill the open end of band with investment, leaving room for sufficient thickness of wax to make cusps of desired thickness. Finish filling the band with wax and have the patient bite down to get the articulation. Carefully remove band, carve wax to correct tooth form, preserving in a measure the articulating surfaces made by wax on opposing teeth. Fill upper end of band after removing from the root with investment; insert sprue and proceed as with any other casting. See Figure 2.

I believe that the advantage of this way of constructing a crown over the short band and cast cusps can readily be seen, as the gold used in casting is not always the same color as the band, and if there is any slight defect in the casting process it is less conspicuous, as it is underneath, instead of on the side.

I have found Fig. 3 particularly adapted to the support of bridge work on lower cuspids where the patient objects to devitalization and Richmond crowns. Prepare tooth as is shown in Fig. 4, cutting key seats and making sides as nearly perpendicular as the case will permit. Make band

open front and back, making it fit snug at anterior cervical and sides. Allow band to gap open slightly on the lingual surface so that the keys and back will cast in one piece. Figure 5 shows where I have sealed or melted wax keys and wax back on dry band before forcing it down over prepared tooth. Wax will not adhere so readily to a moist band, hence the precaution to attach the keys and back before forcing it over prepared tooth. Carefully remove, insert sprue wherever it is indicated.

This band will greatly strengthen this form of bridge support, and is seldom noticeable in conversation. With care the gold at the side and cut-

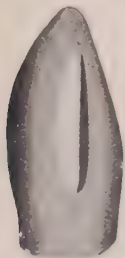


Fig. 4



Fig. 5



Fig. 6

ting edge can be almost entirely concealed, as is illustrated in Figure 3. Sometimes when the band is not sufficiently heated, or is too badly oxidised, the cast portion fails to adhere to band. For this reason, I advocate soldering the two together. The seam being so perfect only a small quantity of solder is required.

Figure 6 illustrates side view of band Figure 3 before wax back and keys are attached.

DESCRIPTION OF AN INTERESTING CASE RESTORED BY ALL-PORCELAIN BRIDGE AND BRIDGES UPON CAST BASES

By J. M. Thompson, D. D. S., Detroit, Mich.

DURING the last week of July, 1908, Miss A., a non-resident patient, presented for restoration, one of the worst cases of broken down roots (which had previously supported their own and artificial crowns) that it has ever been my fortune to see. The necessities of the case and the fact that it would be of interest to others did not impress me sufficiently at first to warrant my making photos, models, etc., before beginning the work. It was after having an X-Ray picture taken to locate a missing cuspid that it impressed me as a remarkable case.

Figure 1, as presented here, is the X-Ray picture, and that it may be fully understood, the reader will simply assume that he is looking from within outward, and the description will be easily followed.

Reading from left to right, we find the first bicuspid the only natural crown in the upper jaw. Letter "a" shows a broken down lateral root supporting a crown held in position by a twist of cotton. Letter "b"

shows unerupted cuspid resting against apex of broken down central root. Letter "c" shows porcelain crown with dowel extending into central root, around which is a roll of cotton which retained it in the gum and tooth. Letter "d" shows right central, a devitalized tooth with an inlay set in one side of the root for the purpose of properly shaping the end so that a porcelain jacket crown could be fitted, the crown being shown in position. Letter "e" shows another porcelain crown also held in position by a twist of cotton, and letter "f" another held in by the same method. It is need-



Fig. 1

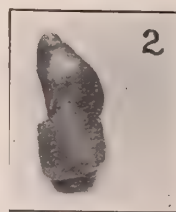


Fig. 2

less to say that the patient was somewhat of an expert in the wrapping of cotton around the dowels of these crowns, and two of them were so securely fastened that considerable force was necessary for their removal.

Figure 2 shows central incisor with cotton still in place, having been worn part of a day before the root was removed.

A bridge of three teeth was first made for the lower jaw (right side), consisting of a shell crown upon the third molar, a Davis crown upon a cast base, for the first molar, with a diatoric molar supported between them.

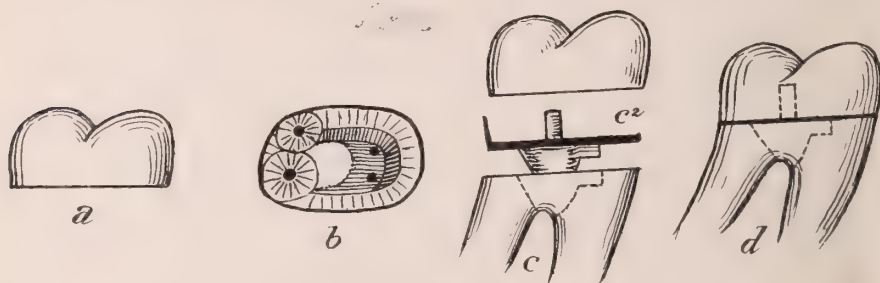


Fig. 3

The root of the first molar was of peculiar type (see a, b, c and d, Fig. 3), having three distinct roots with a perforation separating all three. The surface of the root was ground to a plain surface and a Davis molar ground to fit the tooth as perfectly as possible, and in shaping the porcelain molar it was necessary to place it in the furnace to restore the glaze. A piece of

No. 40 pure gold foil was then burnished over the base of the crown and a post forced through the foil into the hole in the crown. The soft wax was then placed in position and the crown pressed down upon the root, the wax protruding through the perforation somewhat. This was trimmed off and again adjusted, and then removed and the porcelain crown taken away and a casting was made with gold foil in place. When completed, a very thin line of gold was all that would give any evidence of its being used upon a gold base.

A bridge for the upper jaw (right side) was then made, consisting of a Davis crown cuspid upon a cast base, a gold shell for the first molar with two bicuspids made by waxing the facings into place and forming dummies for casting and then removing the facings and using lead pencil points to preserve the holes for the pins. Thus we have a bridge without putting the facings through the fire.

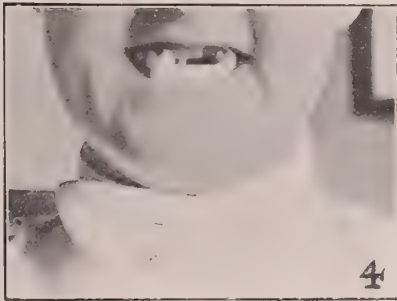


Fig. 4



Fig. 5

Next the lateral, "e," Fig. 1, was removed and a crown of suitable size, shape and color was placed in position. The porcelain jacket was then removed from "d," Fig. 1, and the root prepared with a facer and a dowel of iridio-platinum set in position to support one end of the bridge which was to be made. The lateral root, "a," Fig. 1, which may be noticed as in the place of the missing cuspid, was then prepared to support the other end of the bridge.

An impression was then taken and duplicate pins placed in the impression so that the work could be made upon the model and so constructed that it would draw with perfect ease. Four facings were then selected and waxed into position with pink inlay wax upon a base of one-thousandth inch platinum, which had been previously burnished over the model. New porcelain was then placed upon the labial surfaces of the facings at the cervical portion, also covering the platinum to quite an extent. This was then placed before the door of the furnace and the wax melted out, the porcelain holding the facings in their relative positions. No attempt was made at forming a foundation at this time, as it was necessary to form a block of four teeth before attaching it to either of the roots.

When they were removed from the furnace after the first baking they were again adjusted to the model and pink gum body laid over the first baking and the case again fired. Having secured the block, it was adjusted perfectly to the model, and having made a platinum foundation upon each root in the mouth, the block was then adjusted directly against the roots which were to support it. On account of possible change of shape, only one end was securely fastened at a time, and in this way a perfect fit was secured, and Figures 4 and 5 show the case before and after the work had been finished.

AN IDEAL BICUSPID OR MOLAR CROWN

By George S. Schlegel, D. D. S., Reading, Pa.

AN ideal artificial crown is one that possesses all the qualifications of its natural predecessor. In fact, the artificial substitute cannot decay, can be easily repaired if broken, and very often makes a better appearance than the natural tooth, when the latter is affected with atrophy of the enamel, discolorations, and partial fractures. In order that I am not misunderstood, I wish to inform my readers that a tooth should not be crowned, unless it cannot possibly be repaired with some permanent filling material suited to the class and position of cavity or cavities.

The crown I wish to describe is made possible by the application of the principle of casting gold under pressure. The method can be used for any tooth in the mouth, but is especially adapted for bicuspids and molars. No ethical dentists should place a gold crown on the oral teeth, but bicuspids and molars are crowned by them, with the hollow shell crown, because the repertoire of crowns used to date lacked one that possessed both the necessary strength and esthetic qualities. I will point out the value of this crown to others now commonly used by comparison at the conclusion of this article.

In order to give you a clear conception of this method, I will describe how to make a superior first bicuspid crown:

The proper preparation of the root is essential for the proper adaptation of the crown as for any other crown. The root should be filled with red guttapercha points, which serve as a guide in reaming the root canals, the little red spot indicating the direction of the root. The diameter of the canals should be enlarged in proportion to the diameter of the root. I use No. 16 to 20 gauge iridio-platinum wire in the roots.

The next step is to cut down the root flush with the gum line. Then bevel root on the buccal side, and palatal side to about one m. m. below the free margin of the gum. Take a No. 5 or 6 bur to countersink opening to the reamed root canal to the depth of 1 1-2 m. m. I insert iridio-platinum wire into each canal, cut flush with surface of root, and remove to bracket table for future use. This completes the root preparation.

The next step is the selection of a porcelain detachable crown of any

make desired, but of such a size and color that will conform to the case. If necessary to grind to occlusion, grind the occlusal surface; the reasons for this I will point out later.

Now take a piece of black inlay wax of a rather stiff quality like S. S. White's, and after lubricating the inside of the opening of the artificial crown with a little sweet oil or glycerin, press the wax, which was previously warmed, into the opening of the tooth. Withdraw to see if the undercuts in the tooth interfere with proper removal, and if they do, correct the fault. Return wax to crown, and trim approximately. Warm slightly and press crown with wax to the root. Note the condition of occlusion, position in arch, etc., then chill with iced water and remove. Note the opening to the canals by the elevation in the wax. Heat the iridio-platinum pins previously fitted in the roots, and place in approximal position in wax. Return to root for final adjustment. Be sure that all the wax is hidden beneath the gum. Chill again, remove carefully from root, then remove wax from the crown. Carefully insert a sprue wire at the end of the wax with pins, which touches the remotest part of the opening in the artificial crown. Invest and cast according to any of the methods used in casting gold inlays. Cement crown on cast base, and then cement the crown and base to place.

This gives you a crown that is perfectly adapted, esthetic, durable and easy to repair. The reason for grinding the occlusal surface is obvious from the fact that repairs would be easier if a record is kept of the number of the mould used, then a tooth of the same mould will fit the case without any grinding at the gum line.

It is my firm conviction, gained from actual experience with the insertion of these crowns for a period of over a year, that they are ideal. They are better than a gold crown for esthetic reasons. Better than a Richmond crown because in this ideal crown no band is needed, for bands are an abomination at best, and unless a Steele's Detachable Facing is used, the color is often far from satisfactory. Again, gold tips are unsightly. Better than a Logan crown because it is very often difficult to adapt to the root. Again, the leverage on the pins is very great, and often ends in the splitting of the roots. Better than a Porcelain or Platinum Jacket Crown, because either is liable to fracture, and difficult to repair.

A BREATH of Will blows eternally through the universe of souls, in the direction of Right and Necessity. It is the air which all intellects inhale and exhale, and it is the wind which blows the world into order and orbit.

—Emerson

EXPERIENCE AND EXPERIMENTS IN DENTAL CASTING

By J. R. Osborne, D. D. S., Shelby, N. C.

I HAVE chosen a subject that calls for considerable employment of the first personal pronoun, and my apology for so doing is, I believe I can present some ideas I have on this subject more intelligibly and more profitably by a recital of my own failures and my own successes.

I found this work one of difficulties. There are a great many things about it that are fairly understood now that were not known when I began it, eighteen months ago.

Forcing molten gold into a previously prepared mould is about all it takes to define this process, but it implies the working of some materials not so tractable, and the employment of a technic not so "easy as falling off a log."

I agree with Dr. Taggart that "it is not a lazy man's work," but not in his statement that it will "make a poor dentist a better one," any further than to say, it might and it might not. The dentist who cannot make a good cement or a good amalgam filling, for instance, would not be the one to succeed in the casting business.

It is a work, too, that will not admit of a neglect of detail. Several conditions must be met, many kinds of work performed, the neglect of any one of which leads to failure. And there are no partial failures in this work. All failures of any kind and to any extent, are failures. Nor has it reached the stage of perfection. When some clever fellow tells us how to overcome the influence melted metal has on the walls of our mould cavities, then it will be about time for us to make proclamation that we are at or very near the goal.

Those of us who have worked incessantly and earnestly have overcome the other difficulties that gave us all so much trouble when we first embarked in this work. Let us compare notes and tell of troubles and see how nearly we are together at this time. When I began, which was just as soon as I could get a machine from the Taggart people after the announcement of the cast inlay was made in February, 1907, I found among other troubles waiting for me, something like this:

An imperfect machine.

An investing material that brought me trouble.

A model material that is not an ideal one for the work.

A large solid cup that caused me to endure hardness.

First, as to the machine, I do not wish to say that the Taggart machine is imperfect for the dentist who has city gas to mix with nitrous oxide gas that accompanies the outfit, but it was certainly imperfect for me, not having this gas, and of course I could not use the blow-pipe side at all.

I calculate a poor wretch in Hades with his claws cut off, and a poor dentist in a town without illuminating gas and a Taggart machine.

are alike, at least in one respect—poorly equipped for what is before them. But I *had* to cast with it anyway (for I had purchased it). In *having* to cast with it, I found out a principle that has settled the *casting machine* question with me. In trying to break the joint between the machine and the cup, using a wet investment, I made a good cast with not a pound of pressure, so far as pressure from the gas is concerned. My mind reverted to the time many years ago when I poured molten lead into a green cane. The promptness with which the lead returned was something fierce, and left me with at least two impressions, one on the inside and one on the outside of my head. But laying all jokes aside, I am here to tell you that in my opinion that same force that gave me the sore head is *the* one to drive hot gold into the mould prepared to receive it. I say this after I have had experience with not only the Taggart machine, but all the other ones of any prominence and a lot of the toys thrown in. I had a machinist here make me a machine after my own ideas. I wanted something positive and quick and now I am on Easy street.

I have used all the investment materials on the market and have found them unsatisfactory. A perfect one, so far as I know, remains to



Figs. 1, 2, 3, 4 and 5

be worked out, unless Dr. Price has it in his artificial stone. I hope he has it as this one thing will be a stumbling block until it is removed. The trouble is, it must be impervious to meet some decided requirements and not impervious to the extent that it will not take care of the air contained in the mould previous to casting. This is but one complexity of this complex part of the work. I thought I had it fixed in the taking of a perfect impression and running a model of the tooth and cavity, and making a model of oxyphosphate cement. This gave me some big advantages that I had to turn down. Looked good to me that I did not have to remove the wax model from the cavity, as troubles more than some folks think, creep in just here, in the removal of the wax from the cavity in the tooth in the mouth.

Then, again, the cement model comes out of the fire in better shape, with less change, than any of the materials in the cup. This gives us a great advantage in finishing the filling out of the mouth, an operation that the patient is not apt to find any fault with. But the cement is too dense to allow the escape of the entrapped air. I fought hard to sprue in a way that I could overcome this one fault, but except for certain

pieces, I have failed. For casting a shell, this is the ideal way---using a cement model invested with the wax.

SEPARABLE CUP.

I conceived early in the game that the large cup was all wrong, in that it is large and that it is solid. Wrong because it takes too long for the investment to dry out. Wrong because there is always a residue of wax enough to blacken the gold and often there is enough to do a lot more damage than that. Wrong because wax is not in all cases, in fact in few cases, an ideal model material. I devised a cup and for the last twelve months I have used it with great satisfaction. I use a small separable cup and have changed the time necessary to dry out an investment from 40 to 60 minutes to 15 minutes. Two halves of an investment will dry out in less than half the time required for a solid mass.

One of the beauties of this idea is, I can use a model material that has many advantages over wax.

A knowledge of how to sprue is essential in using this cup if you wish to use as hard a substance as cement for a model. I have often used amalgam but I find no advantage in it over cement or modelling compound, except in certain cases. It gives a clean mould and of course a clean cast, something very much desired. Seven minutes to set, one minute to warm cup, separate and remove model, and seven more minutes to dry out (using a properly constructed dryer) and I am ready to bet on the result.

I neglected to say under the head of investing material, what I use for that. As I said, I have used all the leading materials and have experimented a whole lot, but none has served me so well as the Impression and Investment Compound put up by the Consolidated people. I am not referring to the investment they put up for gold casting. It may be better than any, but if it is I do not know it, not having tried it. Returning to the cup matter, I will say that a reference to the cut will help you to get an idea of the advantages this separable cup has over the solid one.

Fig. 1.—The larger half of the cup on the crucible former with sprue and model filling in position and ready for investment.

Fig. 2.—The smaller half of the cup which is not placed in position until No. 1 has been filled with the investment.

Fig. 3.—The sprue, threaded at one end to screw into the crucible former in order to sprue at a certain height to break investment at proper place.

Figs. 4 and 5.—The cup after investing, setting, warming, separating and removal of model.

It is the part of prudence to pay every just demand upon your time, your talents, or your heart. Always pay; for, first or last, you must pay your entire debt. Persons and events may stand for a time between you and justice, but it is only a postponement. You must pay at last your own debt.—*Emerson.*

THE MAKING OF SOLID AND HOLLOW WAX DUMMIES OF THE BICUSPID AND MOLAR TEETH

By T. C. Hutchinson, D. D. S., Decorah, Iowa

THE art of casting inlays, bridges, and the like, with the aid of pressure, has developed a great many ideas, and to the dentist whose inventive genius is given sway, who thinks and works out new possibilities to enable him to do his work more easily, more rapidly, and more perfectly, the invention is of incalculable value.

With the advent of the cast inlay comes the cast bridge, which, in my opinion, will eventually supersede the soldered bridge for posterior teeth, as did the inlay displace the gold filling.

A great many dentists, in fact I may say the majority of them, have given but little of their attention to bridge work. It is a continual surprise to me to learn from time to time, as I have done, how many of my fellow practitioners overlook this very vital branch of our profession, the rebuilding of lost teeth. Nor can I understand it, for it has been my experience that no work I can do for a patient elates him more or gives him greater comfort than to supply lost teeth by bridge work. You will make a friend of any one for whom you can do artistic and serviceable work along restoration lines.



Fig. 1

For the average dentist this work should be easy to accomplish, since casting is now at hand, and with the aid of a Hutchinson Bridge Die Plate, for making wax models of the buccal and occlusal surface of the bicuspid and molar teeth, he will have no difficulty. The plate contains one hundred fifty-eight moulds of said teeth, in singles, and united in twos and fours, giving ample variety to meet all cases. The teeth have true tooth-like appearance of the buccal and occlusal surface, with perfect alignment, and but a few minutes practice will enable one to make a wax model and adapt it to the plaster model on articulator and get perfect occlusion.

Make your abutments, take the impression, and bite, as usual and, placing your models on the articulator select a suitable mould on the plate for your case. If you want to make a solid gold dummy, take sheet wax, soften with hot water or a flame, roll to the size needed, then, having previously wet the mould, press the wax into it with your thumb, pressing it in as far as you can, then take a blunt pointed stick and continue the pressing until you have forced the wax to the extreme depth of the mould. (Be sure to see that wax reaches the bucco-occlusal points of the mould.) Then finish with the thumb pressure. With a hot spatula or flexible knife trim off the surplus wax from the mould. Lift the model out and you will have a perfect tooth-like wax dummy. See Fig. 1. Cool the wax dummy in cold water and trim it to fit between abutments on articulator. Obtain the

alignment (the heat of the fingers will soften the wax so that you can bend it to any desired shape), then with the hot air syringe heat the oclusal surface, close articulator, thereby getting occlusion, or with a knife you can cut here or there as is needed to make occlusion perfect. See Fig. 2.

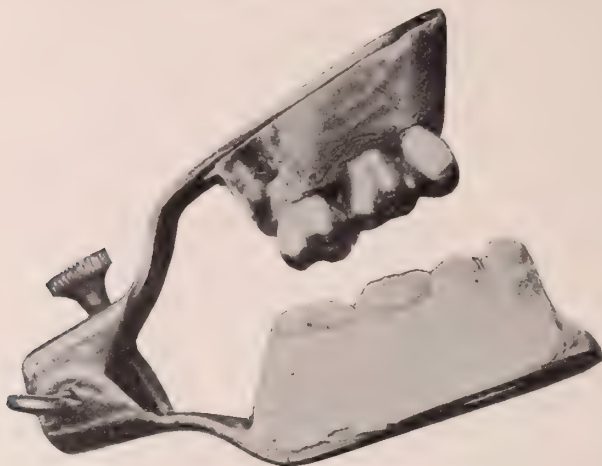


Fig. 2

To make a hollow wax model, select mould from the plate and then take sheet wax, soften as above and press into mould with your thumb as far as you can, then with soft vulcanite rubber press slowly and steadily, heating the wax occasionally, but be careful not to get the wax too soft as it will tear just as easily as though it were too hard. Heat it just enough to make it elastic. See Fig. 3. Trim off the surplus wax and fit to articulator as above. Cool and cast, and solder 22K plate on back, completing your hollow dummy. You can gauge the thickness of the metal by the thickness of the wax used.

Should you want to use porcelain facings on part of the dummy, cut off the buccal surface of wax tooth or teeth; having previously backed your facing and oiled the pins. Then force the facing to place, solder the



Fig. 3



Fig. 4

backing to the wax with hot spatula and on the oclusal tip solder with sticky wax, bringing wax over oclusal point. Then remove the facing (note how easily it comes off) and place No. 8 or No. 9 carbon points in pin holes and cast. Drill the carbon out of the pin holes, and cement facing to place. (These carbon points are carried by the dental dealers.)

It is advisable to make your abutments and dummies in separate cast, and solder together.

When you have used the above method of making posterior bridge dummies I think you will agree with me that you have made your last soldered bridge.

RESTORATION OF BROKEN DOWN ROOTS OF BICUSPIDS AND MOLARS BY CAST METHOD

By A. W. McCullough, D. D. S., Pittsburg, Pa.

THIS method applies principally to bicuspid and molars, which are badly decayed, or broken down, or where by accident, one cusp has been broken off, the break extending under the gum line, and a portion of tooth remaining.

We first, after canals are placed in proper condition, if not already, pack space tightly with some good temporary stopping, and allow to remain a day or two. On removing, the margins will be exposed, and root can be shaped without injury to surrounding tissues. The root should be shaped in most retentive form, leaving a portion of remaining cusp for strength where possible.

A post may be used in canal, but usually its being so short, an impression of gold, making the whole in one, is advisable. After root is shaped, an impression of root with inlay wax, extending into canals, properly trimmed to margins, is now taken, invested and cast.

This assures perfect adaption to root.

Sprue is now cut off, and cast, the part fitted into root, impression



Figs. 1, 2, 3, 4 and 5

taken in plaster or compound, model made and selected tooth built into place with inlay wax; allowing it to extend over lingual cusp in sort of a hood shape to give strength and retention, and then carving occlusion to articulation.

Tooth waxed in position, model is then trimmed as small as possible and invested again, put on fire and allowed to heat slowly, but to a high degree, so as to assure uniting to cast base and less liability of fracture to porcelain, and then cast.

If model has been well shaped and smoothed, it will require but little polishing and make a very strong, aesthetic crown.

THE CAST GOLD INLAY*

By James W. Lyons, D. D. S., Jackson, Mich.

IT is a very great pleasure for me to appear before you at this meeting, one of the very auspicious occasions in the history of this society.

I am pleased to give you the best my feeble ability may permit on this subject which has interested the profession of the world and centered all eyes and thought upon an American dentist and an American city.

I may be unable to advance any new ideas, but I might present some thought in a light that some one may be benefitted in the use of this method.

It is but just to give credit to those few constructive geniuses that are found in our profession. There is not a great number among those who have taken up dentistry as a life work to which we may point in either scientific or mechanical research who stand out pre-eminently above all their fellows, but our ranks are full of men, clean-cut, shrewd and wide awake to every progressive step forward made by the other fellow and are capable of applying the ideas and either simplifying or enlarging upon them, cutting and trimming away the corners, or rounding them out, thus making them all the more practical and useful.

It is true that many men's lives are so filled with work that they do not have the time to grasp and assimilate or even to try out the many valuable methods that are created for their benefit. We find a great many dentists who have long been accustomed to following out one specific plan in their work. They have of course learned, by pursuing this plan, to do their work well and comfortably and rather dread to get out of the rut and accept anything in the way of an innovation.

A departure from the use of foil and the mallet and the adoption of the inlay requires much effort on the part of many dentists.

Two years ago I had the pleasure of presenting a paper upon the gold inlay before this society. It is, indeed, remarkable, the progress made in these two years and I greatly appreciate, when I read over the paper I prepared at that time, the importance the gold inlay has established among our many valuable filling materials.

ADVANCE BEING MADE.

Do you comprehend the advance being made along mechanical and artistic lines by our careful and observing operators today?

To keep apace with the times, is there one thing that makes it more obligatory upon us than to get out and come in contact with the men who are doing things? When I meet and talk with a man who locks himself within his own surroundings his conversation upon dental topics has a like bearing to the knowledge possessed of current affairs by the man who never sees a daily paper.

The gold inlay came to us because within our minds there was a demand for just such an institution. We receive from mother nature many

inventions at just such a time as when our surrounding conditions demand them. Our minds become imbued with the desire to accomplish some especial purpose and by concentrating thought along that line we develop that for which we are striving. At first our accomplishment may be crude, but by still further thought and by the application of scientific principles it is improved and made better.

Esthetic appearance brought to us the porcelain, which, be it beneficial, or be it detrimental, our enthusiasts placed in all cavities regardless of location, but the more conservative man felt the need for a material which would better withstand the battering of mastication.

Manipulatory skill gained with the burnishers in burnishing the platinum matrices to the cavities developed the idea of thus shaping a matrix and flowing it full of the gold and employing it in large molar and bicuspid restorations, by such a material enhancing the value of our operation as to durability and overcoming the friable edge of porcelain. With this inlay of gold we had accomplished much, we had rendered inlay work more practical, and we had achieved much to better our services to our patient, but as we went along in the practice of these methods the only thing we seemed to be gaining was manipulation, we were learning to make closer adaptations, we were studying methods of producing the least amount of shrinkage, methods of procuring the hollow inlay and various peculiarities to obtain an ideal form to get the most perfect restoration of lost tooth structure.

When the time became ripe it was left to Dr. Wm. H. Taggart to bring before the profession probably the greatest achievement of the present century, "The cast gold inlay," and you wonder why *you* did not conceive of this system of producing the inlay, but as I have said before in this paper, we find the results of concentrated thought along this particular line. Dr. Taggart spent many weeks and months experimenting before he developed the proper idea of producing that which he sought. He had the completed product in his mind and was working to achieve that particular result with which he was crowned with success.

THE CAST INLAY.

The cast inlay is certainly the highest ideal in the gold inlay. At one great stride Dr. Taggart placed all our matrix inlays so far in the background and out of date that they will never be resurrected. What an ideal method, when we can take a piece of wax and shape a wax filling in the mouth, restore occlusion and contour in its most minute form and then duplicate that in gold so that it fits the cavity, to absolute accuracy; it is most emphatically a great triumph in dentistry.

The method is but just in its infancy and yet its field seems unlimited. Almost every day presents some phase in practice in which we can apply the principle with the most remarkable and gratifying results.

Besides the inlay filling, it is admirably adapted to the restoring and building up of badly decayed roots for the purpose of crowning.

Ideal for anchorage of small bridges, repairing broken Logans, casting cusps, dummies and for a multitude of uses. Even if Uncle Sam would just guarantee us to keep out of the game we might even be able to retire from the practice of dentistry by casting gold dollars.

But, ladies and gentlemen, talk is cheap—just wait a bit. A few years ago we had men who couldn't find a cavity but what it came under the indications for a porcelain inlay. They even seemed to look upon, with scorn and contempt, the operator who, a little conservative, had evidence about his operating room that he had use for, sometimes, gold, tin and amalgam.

Today the conservative man has been wise, the other fellow is wiser; if he isn't, some one else has his patients.

We are even again hearing the same class of operators who always grasp a new method and ride it to death as a hobby, making the assertion that the day for malleting in gold and for the old amalgam are gone, that they do not expect to make use of the malleted gold filling again.

It has always been a question with me, upon which I have not as yet passed decision, whether these men, faddists, if you please, are really a benefit or a detriment to our profession; my judgment is that they are at least enemies to themselves.

The cast inlay method is a great achievement in art and mechanics and I appeal to you all not to abuse it. By carrying out this method carefully it does for us what no other method ever accomplished to the same extent. Owing to the absolute accuracy which you *must* obtain, it develops in you, unconsciously, a high degree of skill.

Gentlemen, do not assume the idea that all that is required to make successful inlays is a particular kind of a machine. You have much to learn to become an inlay worker.

A gold filling thrown into the tooth most any way, providing you happen to have two opposing angles or pits, *may* stay long enough for the patient to move out of your locality, but an inlay inserted regardless of conditions stays a mighty short time.

The very highest art and skill are demanded in cavity preparation for inlays.

I believe a man will be able to do a very much better gold filling after he has done inlay work for a time, for the reason that his training in the thoroughness of his cavity preparation will instill into him the idea of very superior formation to what he has been accustomed to.

It has been suggested that the casting of fillings might have a tendency to cheapen our operations. Some men argue that as it is easier on them and does not take so long as to mallet in a filling, our fee should be less. For those men, let me say, they should belong to the union labor crowd where they could operate under a scale of wages.

It is too burdensome to my mind to work out a classification for such men among scientific and skillful dentists.

How unfortunate it is that our colleges cannot wake up to the fact that our profession needs fewer men, and *those* with high ideals, and not great numbers, who as failures in the highest arts in dentistry, might make the very best of machinists or blacksmiths.

This class of work should demand the closest application, plenty of time, and the best of your skill, all of which call for the best of fees.

It is a great mistake with the young men entering the profession in taking up the inlay as an easy method to a result, thinking, by so doing, of his abandoning the long, tiresome gold filling, when their experience has been so limited as to be unable to discriminate between the indication for filling or inlay. Their manipulation of filling materials is needed, their judgment and observation more mature.

You will find your patients very appreciative of a method which restores their broken down molars and bicuspidis so excellently to usefulness, with so little inconvenience to themselves.

How much higher the ideal as compared with the gold crown which, at its best, is so ill-fitting around the gingivæ which nature so admirably formed.

How perfectly the inlay replaces so many defective, unsightly, and oftentimes poorly adapted amalgam fillings. While amalgam may have been both the patient's and dentist's friend in saving some pretty bad wrecks, yet like the untrue friend, it has been the cause of many wrecks. I hope we may be able to eliminate some of these failures with the cast inlay.

I do not approve of the use of the gold inlay in the anterior teeth, excepting where great stress is brought to bear, as in end to end occlusion, or in opening the bite where abrasion has cut out the lingual surfaces of these teeth.

The work is very exacting and tedious, but because it can be done in stages it is not so laborious either to patient or operator as some of the older methods, and as far as my observations go, the end to be obtained is nearer reached than by the older method.

We are all amateurs yet in the handling of the cast gold inlay, and finding out every day that there are things yet to be learned which our conceit had attempted to make us believe we knew all about.

CAVITY FORMATION.

The first step as with all inlay work is cavity formation, which, as I have said, calls forth all the skill and ingenuity that the best operators possess, if it is properly done. The plan of the cavity should first be mentally mapped out and then executed, if it takes the entire time for one sitting, because upon the proper and perfect forming of the cavity depends the success of the inlay. With the gold inlay it does not require the sacrificing of as much sound tooth structure as it may for the porcelain.

Force and direction of occlusion must be taken into consideration

and the inlay set so that these forces have a tendency of forcing it into the cavity instead of out and away from it.

We must obliterate all undercuts that the wax may be drawn from the cavity without the slightest change of form. By slightly diverging walls, angles and beveled grooves get all the frictional retention you can.

If possible to get, form your cavities wedge shape with flat base or bases bevel converging towards the pulp.

The pulpal wall should be as parallel as possible to the surface of the tooth upon which the cavity is located. Saucer shaped cavities, with the dependence almost entirely upon the cement, will fail to hold an inlay for any great length of time, no matter how much time or work you may have put upon the inlay itself. Many discouraging failures in inlay work I believe are due to a lack of knowledge or disregard for these principles.

THE WAX INLAY.

The next step is the wax inlay. I believe in taking a good generous piece of the prepared wax, for the reason that small portions are difficult to unite after they have been once moistened in the mouth. Soften the wax in warm water, not above 138° F. Do not apply dry heat as it seems to make the wax crumbly. Now press wax to place in the cavity, see that it presses closely to the bottom and over all the borders, then have the patient close the teeth and go through all the movements of mastication, as just the mere fact of shutting the teeth together does not give us correct occlusion.

The cavity needs no other lubricant than the existing moisture of the mouth.

After getting the correct occlusion of the teeth, I begin carving away surplus wax and also with flat burnisher work the wax down perfectly to and over all borders. Asking the patient to open the mouth, I hold the wax in place and carve and shape contours; then by means of cotton pledgets and tape moistened with liquid vaseline, I finish and polish this wax inlay until it is just as near my idea of what I desire in the gold as I can get it. Very often I lift it from the cavity, chill in cold water, trim away feather edges and reset in cavity two or three times before I have it completely finished down. When I consider my wax inlay complete I remove and attach my little sprue wire. I prefer doing it this way to attaching sprue to wax in the cavity. Next, adjust sprue to the little crucible former and proceed to invest. This is another portion of the technique which is very critical and wherein your success hangs in the balance.

INVESTMENT.

Your investment must be of such material in which the shrinkage and expansion shall be the minimum and not change form whatsoever under heat. It needs to be carefully and uniformly mixed and I have the habit of turning my plaster bowl on its sides and revolving while mixing until my investment is coated all over the inside of the bowl in a thin layer—thus allowing escape of any small air bubbles. Now, I prefer a small

spatula to place the investment about the wax inlay, forcing a little investment ahead of the spatula and thus driving the air ahead and out of the corners and depressions in the wax. I build up investment about the wax until it is a thickness of probably a quarter of an inch all around. Now I place investment over all the inside wall of the flask and set by a twisting or rotating movement onto the crucible former and carefully proceed to fill it full with remainder of investment, not jarring it, as I wish not to liberate any of the amount of air still contained in the investment and by so jarring it would gather together this air and is very liable to collect on the wax model in little air bubbles, which, when your cast comes forth, you discover as little fine nodules of gold, which you wish were not there as it interferes with its being a *perfect* reproduction of your wax.

Now give the investment from fifteen to thirty minutes to set before applying slow heat to dry it out. When all moisture is gone and the wax has been absorbed and vaporized, place in machine, melt pellet of gold and cast. I aim to have the pellet of gold about three times the bulk of the inlay. The heat for melting the gold should be very intense and concentrated as with the nitrous oxide flame or the electric arc, as the gold should be in as fluid a state as mercury.

CASTING.

The casting may be done by any of the machines now on the market, providing you can get absolute accuracy.

In experimenting with the different grades of gold to observe the contraction, I can but recommend that when you desire absolutely the best results, you must use pure gold. Dr. Price, of Cleveland, has done some very fine research work along this line, demonstrating both expansion and contraction of gold and its alloys, also expansion and contraction of our present investment materials, which you will find in the May, 1908 number of the "Items of Interest." You may cast your inlay with the lower K. golds and get a result which to the operator who is not scrupulously observing might seem to be good, but when you examine for an absolutely perfect adaptation you find it deficient somewhere, owing to the contraction of the metal.

The casting of the hollow inlay has appealed to me because I always looked upon the hollow matrix inlay with favor, and employed it wherever the case permitted me to do so, consequently when taking up the casting I began trying different ideas to obtain the hollow cast inlay. The best method I have found, up to date, is a little copper bulb with a handle attached to one side of it and a small point a little larger than a needle attached to the other side, which is wrapped with absorbent cotton or fibre asbestos, then by heating the bulb hot, enough heat passes into the point so that by touching the wax inlay where I desire the hollow part, the point will melt the wax and the absorbent draw the melted wax away, leaving just as much of a hollow portion as you desire.

The hollow inlay gives us a larger layer of cement just over the pulp

and insulates it from the metal body and eliminates the thermal shock, as where we desire this inlay we usually have cavities which are in just such a location as to be particularly sensitive. They also give us more attachment for the cement which serves to increase the value of retention.

CEMENTING AND FINISHING.

When our inlay has been formed and tried to the cavity and found to be perfectly satisfactory, set it with a very fine grained inlay cement and burnish all borders and polish, and if you are like me, you will at this time think of our grand old Professor Watling, when he said, in polishing the gold filling, give it the polish of the inside of your watch case.

SUMMARY.

In summing up, let me say, first, make a study of the conditions, with your patient's benefits uppermost in your mind; use the cast inlay if in your judgment the restoration will be the very best that can be done by any known method; if not, then use that which *will* give such a result.

Do not insert the inlay until you are master of the cavity formation and know, *absolutely know*, that the cavity formed will hold it. Know that your wax inlay is as near perfect as you can mold it and get an absolute duplicate in the gold. Do not insert an imperfect inlay because you dislike to do it over again. Be a man and take the bitter with the sweet. Your patient will appreciate your interest in having your work right, but will despise you when she discovers you have deceived her by accepting your fee for a defective operation.

The measure of success we are to meet with lies in direct proportion to the care which we use in the preparation of our work. It is true to the same extent as with any other class of work, a man's individuality, his honesty of purpose, his character, his appreciative sense of his position in his chosen profession towards his services to humanity, are all distinctly shown.

If the operator is not willing to give time and study and research work in experimenting to bring this method under his control that he may better his services to his patients, I would advise him to let it alone. If the same operator is still unwilling to better his services to his patients along even the older methods at hand and still persists in staying in the same old rut at this day, it would be just as well for his patients if Divine Providence should conclude that his services were better needed in other fields.

That which I have desired most to impress upon you is thoroughness.

The dentist who is of the greatest value in his community is the one who is ever alert to every progressive step that will in any way benefit his patient. Such a man is elevating his profession, is making the best of the talents which have been given him, and lastly, doing the greatest amount of good for himself.

DISCUSSION.

Dr. L. E. Custer, Dayton, O.: I cannot to any extent disagree with any of the points that have been brought out in this most kindly and excellent paper by Dr.

Lyons, but rather wish to confirm some of the statements which he has made. I wish at the outset, to pay a few words of tribute to Dr. Taggart. We are prone to think of the cast inlay, or the invention of Dr. Taggart, as one not meriting what has already been said of it, because of its extreme simplicity. When a novice looks at a complicated machine, with all the levers, springs and wheels, he stands back in amazement and says to himself, "What a genius that man must have been who invented that." However, when a genius takes hold of such an appliance as that and has reduced the large number of springs, levers and wheels to a small number, to perform the same function, and has simplified an extremely complicated machine, to the thoughtful person that is the machine in which genius is displayed. The simpler machines are those in which the greater exercise of judgment and of patience has been used. And so I would say of the invention of Dr. Taggart, that we are prone, I think, not to give it the full measure of credit which is due this invention, because of its extreme simplicity—a simplicity which in the year and a half since its introduction has been the means of placing upon the market possibly fifty different methods of doing essentially the same thing; I say, it is such a simple thing at this date that we are liable not to give the full measure of credit to the man who worked out and who simplified this process.

Coming now to the paper, in speaking of cavity preparation, I think that we have had enough experience with inlays, both porcelain and gold, to know that the adhesive property of the cement is not the most effective thing in holding the filling in the cavity; that in just the proportion as we are able to so form the cavity that the filling will be held mechanically, keeping in mind the direction of stress of mastication, will the filling be retained, and it is a mistake on the part of any one beginning this work, who has not made inlays of either gold or porcelain, to trust much to the retentive property of the cement. We must, in some manner or other, form a dove-tail, and that can be done at the same time and the filling can be so shaped that it can be introduced as one plug of metal or porcelain.

The essayist spoke of inlays for the anterior teeth, and did not place much importance upon the value of cast inlays in this part of the mouth. I think that here is just as important a place as any other, and especially on the corner of an incisor where porcelain, by reason of its brittle characteristics, of which you are all familiar, cannot withstand the stress; here I believe that the Taggart inlay is the thing, but I would call to your attention the value of platinum combinations with gold, when the filling is used in this position. Platinum melts at about 3600° Fahrenheit, and you know that there are only two means by which that can be melted at present, the oxy-hydrogen blow pipe, and the electric arc. With the oxy-hydrogen we have enough heat to melt it in small quantities, but with the arc light we have 6,000 degrees of heat at our command and with this device it is possible to fuse pure platinum with proper investment material. We may make a pure platinum filling in this manner; however, it would call more especially for proper investment than for anything else, for withstanding so high a heat at the time of casting it would be better if we were to add some gold to the platinum—about three-fourths of gold and one-fourth platinum. It does not materially affect the color. I think the color is better than with pure platinum, so I would suggest the use of platinum and gold cast fillings for the incisors and any conspicuous fillings for the incisor corners and the anterior proximal bicuspid.

The doctor suggests the warming of the inlay and the wax impression material in water. I have felt from the first that the forming of it on a stick with a little sharpened point, and that heated over a flame to bring it to the right degree of softness will give you a better impression of the cavity, because of the fact that the surface is quite soft and it is forced in every detail and line of the cavity on the inside by the harder material back of that. I rather lean towards that method of obtaining the impression of the cavity.

The doctor pays much attention to the wax filling. I think that this is just the thing to do, because at this stage, a few moments spent in the proper shaping and

dressing of the wax fillings is time well spent and will save you much more time when it comes to the setting of the filling. I prefer to do this also for another reason, and that is that it is easier at the time of setting to burnish and thin the edge in closer apposition to the margin than it is in the unfinished or heavy margin of your filling. You have thus two advantages of dressing the wax beforehand, or if you fail to do that, trace your filling and get a close fit with the margin before setting.

In removing the wax filling I have always liked to warm the end of the sprue wire and imbedding that in the inlay it serves as a handle by which the filling can be easily removed. At the time of taking the wax out of the cavity you can feel whether or not you have prepared your cavity so that it can be properly drawn out, and if you have in any place a slight undercut, of course the enlarged part can be readily rubbed down so that it can be lifted from the cavity to be set again, then going over the margins for the last time. I have always been better satisfied with the melting in of the sprue wire than drawing or lifting the filling out of the cavity by the other method.

I think in our gold fillings we should use pure gold, because of the fact that it can be easily and readily burnished to fit the cavity margins. Never use a lower karat.

In addition to the notes which I have taken on the paper I would like to make a few suggestions which have come about through my own experience. Once in a great while an inlay will be made that has not been sharply cast; it fits the cavity to the very corners but its margins are rounded instead of sharp. This being the case, it is an easy matter, if the margins are excessive, to set that filling and immediately afterwards go over the margins, turning an old carborundum wheel which has been filled with the grindings of gold, revolving that towards the margin and you can push up the pure gold or flow it ahead of the wheel until you have a perfect adaptation. This can be done where the corners have not been filled out entirely. There are many faulty margins that can be made absolutely good in that way. If the filling is dry and the carborundum wheel is dry it is wonderful to what extent you can push the gold towards the margin by reason of the wonderful cohesiveness characteristic of pure gold.

Another point is this. In the proximal fillings there will always be noticed a point of contact with the neighboring teeth which is a little flat place right at that point. You can take a bit of 22 karat gold, about the size of a pin head, melt it on there, round it out, and it gives a rounded contact surface, to one which is usually either flat or concave. Sometimes these fillings are so well and closely adapted to the cavity that in a quite frail tooth you may chip off a little margin of the enamel. You need not make a new filling in this case. Heat the filling to redness under the blow-pipe and let cool without water, and place in the cavity a little bit of platinum and gold foil, or inlay platinum matrix material should be placed over the break. When the foil has been annealed it will cohere to the gold filling, and it can be formed in a moment to the enamel margin, and the filling may be removed and this little cup-shaped cavity can then be filled full of 22 gauge gold, and your filling will be as good as ever.

Dr. Muir, Detroit, Mich.: I want to congratulate Dr. Lyons upon his paper this evening. When I first started making gold inlays, I had lots of failures, and was just about totally disgusted with gold inlays, but now I have very good success. The dentists who use gold foil, and have always used it, cannot be blamed for not wanting to take to the gold inlay, but there are comparatively very few *good* gold fillings inserted. There is so much in favor of the gold inlay that I think every man should have an adequate inlay machine for making them. They must be used with discretion, of course. Those enthusiasts who have used porcelain indiscriminately, have some regrets, but it does not follow that everybody is going to take up the gold inlay and use it where it should not be used.

Dr. Taggart's paper, I think it was in the December Issue of the *Dental Register*, gives a very concise and accurate method of each step of making the wax model. I got more from that, than from anything that I ever read on the subject. The cavity must be prepared properly, and I like to heat the wax in water. Dry heat is all right

if you do it properly, if you get it just exactly right, it will be all right, but it is easier to get it exactly right in water, and the water, of course, must be of the right temperature. After pressing wax into the cavity have the patient bite and cool it with a stream of cold water. Trim it off, and then smooth it with Three-in-One oil. There is something in that oil that dissolves the surface of the wax, and gives you a perfectly smooth surface. In approximal cavities, use tape; put some Three-in-One oil on it, and run it in between the teeth, and it will give you a perfectly smooth surface there. Remove the inlay by the use of a fine copper sprue wire; heat it over the alcohol lamp, or gas; insert it into the filling with the right hand, holding in the left hand the water syringe filled with cold water, and when the sprue wire goes into the inlay, put stream of cold water on it. Remove the inlay by grasping wire with pliers. If it comes out hard, put it back again. If there is a slight undercut, it will burnish down. Before you take it out the last time, see that the margins are all right. After it is out, add a small drop of wax from spatula for contact point. Now take care in mixing your investment compound. Do not attempt to make gold inlays with a poor machine, and with a poor investing compound. You must have good material to get good results. Carefully mix your investment compound. I mix it in a saucer. Don't get it too thick; spread it thoroughly over the saucer, making a thin layer, and shake it well and blow on it, making the bubbles disappear that rise to the surface. They can be avoided by carefully mixing investment compound and applying same to the inlay with a camel's hair brush. After you have your inlay invested, take care of that. I learned this afternoon that men have had a lot of failures due to careless drying out. You cannot hurry your investment in drying. I set it aside for an hour after mixing, and let it thoroughly harden. Then put it on a slow Bunsen burner or in an oven, something of uniform, steady heat, and gradually increase that heat, and I like to leave it there an hour until the moisture is well out of the investment compound, and there is no steam coming from it. Then you can give it as much heat as you like. If you attempt to melt your wax before the moisture is out of the plaster, the wax will bubble out of the cavity, and then you have a rough sediment on the inside of your cavity, and this spoils the inlay. In heating your investment, don't get your investment too hot. It is not necessary to get it hot enough to melt your cup; just get it hot enough to melt the wax. It will smoke a little while and your investment will be black. Apply blow-pipe until the bluish colored flame has entirely disappeared, and possibly a little longer. It is only necessary to burn out all the wax, and further heating does not do the investment any good. You cannot get satisfactory results for an inlay with any other gold but pure gold. 22 Karat will not do. I like to try the inlay in, as soon as I have it cast, and cut the sprue off. If it goes to its place nicely, take it out and polish it with sand paper disc, and with the grinding surface of a molar, you will have to cut down in there probably with a fine bur—a very small plug finishing bur, or a No. $\frac{1}{2}$ or a No. 1 bur for the fissures. A dull one does the work very nicely; and then burnish. Put the inlay in the cavity, and before setting, thoroughly burnish it around the margin. I do not like to burnish after setting. You must burnish before the cement thoroughly sets. Unless it fits into a wedge-shaped cavity very tightly, you are liable to move it, and if you burnish it before cementing, you do not have very much, if any, burnishing to do after. Polish it with sand paper discs, or fine stones rotated on the margins from the inlay towards the tooth. Finish with pumice.

Dr. W. L. Williams, Sault Ste. Marie: I have had very little experience in cast gold inlays and I am here to learn, and I think we ought all to honor the pioneers of this work. It is those men whose names will go down to history, and as I am not a pioneer, I honor the gentleman who read the paper, and my friend, Dr. Custer, and will beg to be excused from saying anything more.

Dr. Travis, Plymouth: The paper has been so ably written and so well discussed up to the present time that while there may be a great deal that could be said

upon this subject, yet, it seems to me, that there is very little that we could say to-night that would add very much to what has already been said. However, we all know that the gold inlay of the cast variety has been a blessing to the profession and to our patients, and that it will be received by both alike as a blessing. We know, too, that it possesses qualities that no other filling possesses. We obtain by this method a strengthening of the walls, and a more perfect sealing of the cavity, and at the same time we obtain a non-conductor. There are a great many cavities that we have to deal with where it would not be wise for us to use the gold inlay; however, up to the present time there seems to be nothing equal to it in other cavities, and it seems that a great many of us are led at this time to use the gold inlay in cases where it is not indicated. C. N. Johnson, who has been one of the greatest advocates of the gold foil filling, is now one of the strongest advocates of the gold inlay, and yet he has said that if the inlay had been used for forty years or more as the foil filling has been, and we were now to introduce the foil filling, that we would be just as likely to go into ecstasy over the use of the foil filling as we are now over the inlay. The methods of producing this inlay by various instruments is something that I am not very familiar with, but in the clinics that I have witnessed it appears to me that a great many, in demonstrating this, have been satisfied by submitting to us samples that are a long ways from perfect, and they always do that with the apology that this is merely a clinic and that it has been done hastily; that it approximately fills the cavity, and that you see the principle, and now if you will only give it time that you can produce perfect results and get perfect borders; but only in very few cases we find that they can with uniformity get these perfect borders. I believe, as a member of the profession—and most of us believe the same way—that it is not the price of the instrument with which we are to attain these results that determines our choice, but rather, that we may be positive that with this instrument we shall be able, uniformly, to secure perfect borders. What I mean by perfect borders would be a border sufficiently perfect that we could burnish over and get a perfectly tight border, and protect the cement so that none could tell it from the gold foil filling.

Dr. J. W. Lyons: The discussion of the paper has not been agreeable to me, in a way I would like to have it. In preparing this paper I hoped to get a great many pointers myself in the discussion of it, from other men, because I feel that there are many things yet to be learned about the cast inlay; it is not nearly perfect, by any means, and there are a great many things to be developed yet.

Dr. Custer thought I did not lay stress enough upon the use of the cast inlay in the anterior teeth. I do not like to use the gold if we can get away from it wherever it is possible to use porcelain, and I think it is possible by proper methods. I like to see the porcelain inlay used in the anterior teeth, but where great stress is brought to bear upon it, and where it is impossible to hold it, then I would resort to the gold inlay, because, without regard to my own feelings as to ideal methods, in my own mind I feel that the patient's benefits are the first thing to be considered. Durability has much to do with the building up of a practice and the building up of your reputation. If you insert fillings or inlays and they have to be restored in a very short time, you lose the respect of your patient; you cannot hope to hold the respect of your patients in having work fail; although you may desire to have a porcelain stay in place, thinking that it is much more aesthetic than the unsightly gold, yet your patient will think more of you if your work stands.

I thank Dr. Custer very much for the added suggestions that he has given us, and the gentleman here on my right, because I know from his talk that he has been up against a great many of the same things that I have been.

LATEST DEVELOPMENTS IN THE CAST GOLD PROCESS*

By **Albert L. Le Gro, D. D. S., Detroit, Mich.**

The fundamental principles underlying the process of casting gold will, in my mind, ever remain the same and it is not the latest developments in the process that interests the practitioner of dentistry most, but the latest developments in technique and with the permission of your honorable committee I will treat the subject from that standpoint.

It is not my purpose to write of the advantages that accrue to the average dentist should he adopt the method of casting gold fillings in his practice, for I assume that from its very incipency even the most skeptical were quick to see how it would revolutionize certain operations for good in the profession.

At this stage in the development of appliances by manufacturers it is a matter of little consequence which machine you select though in my mind there is a difference which I will endeavor to show you later.

I have always advocated strict adherence to one method until that particular method had been mastered or found by personal experience to be inadequate. If you are using one machine and your neighbor is using another, it does not necessarily follow that because your neighbor is getting better results than you, that his machine is necessarily to be credited with the success.

In a majority of cases, it is a matter of your neighbor mastering his machine earlier and at the same time developing a technique that is more careful and complete than yours.

Analogous cases are presented in other lines of machinery, such as automobiles, for instance. Two men may have identical cars, one runs his with a minimum amount of upkeep and trouble and the other is always in trouble and finds that his way of taking care of and running his car is causing the expenditure of a large amount of money as well as time. I merely mention this to show that the man who is having trouble with a certain casting machine is by no means in an anomalous or unique position. He certainly has seen or heard of beautiful castings made by the same make of machine that he possesses, so the natural supposition is that he has left some little detail out in the process of casting which brings about his failure and he, not the particular machine, is to be blamed.

INLAY WAX.

Before going into the subject of technique I would like to give you the results of my inquiries as to what ingredients should enter the make-up of a perfect inlay wax. I have found that a combination of gum dammar, carabauer, and paraffin in the proper proportions will make an ideal inlay wax that can be carved like a fine grade of clay without distorting, attendant fracture, or the use of warm instruments, a method to be deplored and forever banished in trimming wax inlays.

*Read before the Michigan First District Dental Society, Jan. 14, 1909.

All except the paraffin are waxes of vegetable origin and can be readily volatilized. The use of bees wax should be avoided as its addition even in much smaller quantities make a much softer wax which is more difficult to carve.

Waxes that contain animal extracts such as stearin, spermaceta, etc., should be avoided as they separate from the compound in heat, especially in a flame, and they tend to make the wax greasy and flakey. Carnabauer is the hardest and highest fusing of the waxes and is added to give the wax edge strength and hardness, and to make the compound higher fusing. The gum dammar is a hard translucent gum which gives hardness and toughness to the compound. Dammar overcomes the tendency to flake and scale which is characteristic of the wax compounds containing paraffin. The addition of paraffin makes a tough plastic compound which is easier to congeal. A small quantity of ceracin is used to prevent the wax from being brittle and a black vegetable coloring matter is added if desired. A vegetable coloring matter is recommended because it leaves no residue when the wax is burned out. Green should be avoided as most of the greens which are usable are salts of copper and poisonous. There is a great difference in carnabauer wax on the market. Most of this wax is imported and used for making floor waxes and while you will find some that is hard as stone, most of it is crumbly and cuts more like an inferior grade of clay. The best grade must be used for inlay wax as the quality of the wax depends largely on the quality of the carnabauer used. I know of no other wax on the market that suits me so well as that manufactured by the Ransom & Randolph Co.; this comes very near to being just what we want. The busy dentist has little time to experiment with matters so small even though he should be thoroughly acquainted with the ingredients and quality of same, that enters into the makeup of such a compound.

That I may more clearly explain some of my theories as to cause and effect in casting gold it is necessary that I treat of the crystallization of the different grades of gold and the metallurgy of that metal to some extent also. If you will take four nuggets of gold of 18-20-22 and 24 karats respectively and bring them to a dancing molten state and then quickly remove the flame, you will notice that the mass of pure gold, in crystallizing retains practically the same shape in a crystallized form as it did in a fused state. The 22K. will flatten some; the 20K. a little more and the 18K. will be perceptibly flattened. The natural deduction is that the molecules of the gold in the 24K. have the greatest tendency to retain a fixed relative position and as you go down the scale it becomes very necessary to use more definite pressure on lower grades than on the pure in casting.

The pure gold, the melting point of which is 2012 degrees Fahrenheit and much higher than the lower grades, necessarily crystallizes much slower than the others. About 30 seconds is necessary for the complete

crystallization of pure gold; and right here I would like to tell you why I think some machines are better than others, even though beautiful work is accomplished with any of them. When molten gold is forced into a cavity, whether it be by air, centrifugal force or steam pressure, each molecule of the gold used is supposed to have a definite relative position. During the first few seconds in the process of crystallization, pressure should be definite to accomplish this, not increased or decreased and some means should be furnished by the manufacturers of machines that admit of an intelligent understanding by the dentist of what is going on in the way of pressure during the entire process of crystallization. If a machine is not constructed on these lines it should at least admit of the slight increase of pressure from time of application until complete crystallization has taken place. In experiments conducted by myself about a year ago I learned that a definite pressure of 4 pounds, if absolutely definite during the entire time of crystallizing was infinitely more accurate than those that ranged from 30 pounds down, with no fixed pressure at any time. My own supposition is that the molecules were not held in their correct relative position during the entire period of crystallization and though the inlays were just as perfect to the naked eye, they did not fit into the cavity with the nicety that the one of 4 pounds' definite pressure did. Even greater discrepancy is shown in the use of different grades of gold. The common alloys of gold are silver and copper, either one of which tends to make the gold more sluggish than the pure gold. The lines in the finished casting of an alloyed gold are not as sharp and it is therefore not deemed advisable to use anything but pure gold in cavities of extreme shape for it is a rare case that presents no defects when the lower grades of gold are used. If alloyed gold must be used, I would suggest that gold alloyed with copper or platinum or both be used. Copper does not materially lessen the malleability of gold while at the same time it hardens it. Silver is objectionable at all times as an alloy for gold that is used in casting. It has been recently recommended by some well known dentist on account of the color produced, but it is a mistake to use gold alloyed with this metal, for aside from making the gold very sluggish, it has little edge strength and will not make what I call a perfect inlay in cavities of extreme shape.

With a little experience you can learn to distinguish the alloy in any gold combination on sight. A yellow tint generally indicates equal parts of silver and copper. A red tint, an excess of copper. A green tint, an excess of silver. One of the most desirable alloys for cast inlay work is composed of Gold, 22 Dwts., Plat. 18 Grs., Copper, 3 Grs. It is a rather difficult alloy to produce but makes a sharper casting than any other I have been able to find as there is very little oxidation compared with 18-20 and 22K. golds that are alloyed with silver and copper. I do not recommend this alloy for its ductility or malleability, for like most of the alloys, it is sadly deficient, but is much superior to gold alloyed with silver as regards color and will make a sharper casting.

In regard to the latest developments in technique,—there are a multiplicity of methods all of which it is not my purpose to treat. I will confine my remarks to the little hints that my own personal observation and experience have taught me. As you all know, the possibilities of this work are only limited by the skill and ingenuity of the man. So many different possibilities suggest themselves to different men in this work that it would be presumptuous on my part to attempt to tell you of all the new things that everyone has worked out.

In the May and June, 1908, numbers of the *Items of Interest* are two very interesting papers by Dr. Price, of Cleveland, which are well worth the time of any dentist and while the deductions of Dr. Price are not verified by my own personal experience there is much of interest in these articles that show thought and study. These articles come the nearest to working out the problem and are the only papers on casting gold that I have read that exhibit an intelligent knowledge of the conditions as they are.

SECTIONAL INLAYS.

These are used only in cavities of extreme shape where the caries has attacked the tooth to such an extent that it becomes necessary to retain all the solid tooth structure that is left. Take a cavity in a large molar approximal involving the occlusal angle with the diameter bucco-lingually much larger at the cervical than at the occlusal portion. The cavity is so large bucco-lingually at the cervical portion that in order to prepare a solid or one piece inlay, it would be necessary to cut down a considerable portion of good solid tooth structure. To avoid this the sectional inlays or two piece inlays are employed. These inlays should be made hollow by carving the wax inlay or by the use of suction and heat. I have been using a suction apparatus that is now on the market and while it is a great improvement over the carving it is quite crude. This defect will be overcome, I have no doubt, as the evolution of casting gold progresses in dentistry. The orifice of the hollow cavities should be so carved that where the two sections are in place the cement will form one solid mass running from the hollow in one section to the hollow in another.

Some one has suggested the use of ethyl chloride on cotton for chilling wax inlays. I have found it very satisfactory also in rubbing a smooth surface on the outside of wax inlays. When the wax inlay is removed from the mouth it should be washed in soda water to remove the mucus which sometimes produces a surface on the gold inlay that you cannot account for otherwise.

DITTMAR CAST SHELL CROWN.

I shall describe the Dittmar method for casting a cast gold shell crown for I think it the most perfect gold crown ever constructed. If you must put on gold crowns and can get a good fee for them, the Dittmar method will enable you to portray nature as no other method will and at the same time enable you to construct a crown that will give the minimum

amount of irritation to the gums. After the root and remaining part of crown have been ground down properly, take 34 gauge pure gold, make band to fit. This gold is so thin and soft that an absolute fit can be burnished slightly under the gum. Trim band proper height for top to be soldered, which completes an ordinary box cap. Have the top and band fit accurately so that the minimum amount of 22K. gold, not solder, will be used to solder the two together. I recommend 22K. gold for soldering for without it, the gold used in casting, will melt a lower grade of solder and percolate or rather be forced in fine films up inside of the band. When cap is completed place on root and with modeling compound in a double articulating impression tray, take the bite and impression at the same time. Articulate plaster for articulating side and inlay investment compound for crown side and paint the adjoining teeth with oil. Now heat up a quantity of inlay wax and use camel's hair brush to build up wax on the cap to proper contour and articulation, smooth surface with chloroform, saw off adjoining teeth and then the waxed crown. Twist and cast. The possibilities here are great and most beautiful work can be accomplished.

GOLD AND TIN INLAYS.

To use an inlay made of a layer of tin and over it a layer of gold at first thought seems a good procedure but the only argument that I can see logical in its favor is the economy of gold. A combination tin and gold inlay can have no other particular advantage over a gold inlay for the layer of cement must come between the inlay and tooth substance and all the arguments used in favor of tin at the cervical third or half of the cavity are lost. The ideal procedure is to insert the tin with pluggers, burnish the top and then make a cast inlay of gold to finish the operation. To make a combination tin and gold cast inlay is somewhat difficult, at least it has been so in my own experience. After preparing the cavity a wax inlay is made of the cervical third or half of cavity. The top of this wax is made smooth and then oiled. On top of this another wax inlay is made to come flush with borders of remaining portion of cavity and to restore occlusal and approximal contour. This part of wax is then removed and cast, leaving the cervical portion of wax still in cavity. When the occlusal portion is cast the gold is heated slightly, placed in position in the cavity and then withdrawn, when the cervical portion or remaining wax will be seen to be attached to the gold already cast. Now comes the most difficult part of the operation. Gold has a great affinity for tin and the flask holding the investment must be at about an exact temperature to cast the tin. Tin melts at 442 degrees Fahrenheit and is not sensibly volatile, so if the investment is heated until the wax is entirely burned out of the investment and there is no formation of gases continuing and then allowed to cool until about 400 degrees Fahrenheit, melting the tin now with blowpipe, using no more than the required heat of about 450 degrees, a successful casting on the gold inlay can be made.

If these instructions are not followed out, the gold under a greater degree of heat will entirely absorb the tin and a brittle lead color mass will be the result. Hydrochloric acid must not be used under any circumstances to pickle the filling as tin dissolves in the acid with the evolution of hydrogen and formation of Stannous Chloride.

COMBINATION GOLD AND PORCELAIN INLAYS.

One of the most satisfactory operations in large restorations is the gold inlay with porcelain face baked in. The inlay is made in the usual way, preferably with platinum alloyed gold. The wax inlay is carved out or sucked out with heat and air on the wax corresponding with the portion to be restored in porcelain, with undercuts. After the inlay is made, Jenkins porcelain is baked in and an aesthetic result is accomplished. Before baking in the enamel, place gold inlay in cavity, burnish borders and reduce line of gold on exposed border between margin and cavity for porcelain to a minimum so that the line of gold will be almost imperceptible when work is finished.

PORCELAIN CROWN WITH CAST CAP AND DOWEL FOR BADLY BROKEN DOWN ROOTS.

This is a branch of the work of Drs. F. Ward Howlett and C. J. Lyons, of Jackson, Mich. They have worked together practically in producing a technique that gives very fine results in these extreme cases of badly broken down roots. I first saw the work of both these gentlemen, introduced at Indianapolis, early last year and after mastering it to some extent have gotten very satisfactory results in my own practice. An article on the subject, with detailed drawings by Dr. Howlett, appeared in the January issue of the *Dental Summary*. Every dentist should read it. I will give briefly the technique:

HOWLETT'S CROWN.

A bite is taken over the abutment to be crowned with Stent's modeling compound, which is very hard when cold. The compound is then carved to fill the space and imitate the crown to be restored. A thin platinum matrix is then swaged to the occlusal surface of the tooth which has been built up and carved from the compound. This matrix is then removed from the carved tooth and filled with porcelain by a series of bakings which results in a cap of porcelain such as might be stamped from gold in the die plate for a gold crown or bridge dummy. A second matrix of platinum is made on the root stump or abutment and porcelain built onto it restoring a considerable part of the tooth. This is then placed on the stump in the mouth and the occlusal part of the crown first made is waxed on top of it and the patient forces it to proper occlusion while the intervening wax holds the two sections of porcelain together and in place. The crown is then removed from the mouth and a portion of the wax removed and replaced with porcelain. Then the rest of the wax is removed and the space filled with porcelain and the whole crown is fused together into one piece.

LYON'S CROWN.

Dr. C. J. Lyon's crown which differs somewhat from that of Dr. Howlett's, though the fundamentals are practically the same, is a porcelain crown with cast cap and dowel for badly broken down roots. Use iridio-platinum post gauge 20 as a matrix for carrying wax into the root, letting the wax extend over the gingival margins of the root. This should then be carved to form a plate for the crown; a square post should be formed in wax about 5 millimeters long and set in the middle of the plate for the reception of the crown. The wax model of the cap and dowel is then cast in pure gold with the iridio-platinum wire in the center, after which it is polished and set in the root. A platinum matrix is next made of the plate and post by forming a tube for the post and soldering to a square piece of platinum, afterwards it is burnished to a perfect adaptation to the plate and post. A Davis crown is used for the body of the porcelain crown by grinding out a section from mesial to distal large enough to accommodate the post. This is waxed in position over the matrix and all withdrawn and Consolidated body packed around the matrix and fused. After the crown is completed the matrix is removed from the crown and the crown is cemented to the cap and dowel.

BRIDGE WORK.

Those who have had experience in casting bridges in one piece will agree with me that it is entirely the wrong procedure and especially where inlay abutments are employed. There is no known investment compound that when set, even under perfect conditions, will expand enough to compensate for the contraction of gold when crystalizing. It is therefore necessary to cast bridges in sections and solder together in order to get exact results.

The fallacy of casting directly onto porcelain I think is quite well recognized. Such methods have no other claim to general adoption than that they are an "easy and rapid method or means of obtaining a result which cannot be wholly successful."

In conclusion I will say that it has not been the object of the writer to assume that there is any "only way" in the processes of casting gold and while the subject given me by your committee is not one that I could possibly stick to the text on, my initial object will be accomplished if this paper but serves as a stimulus to bring out many instructive facts that you all must possess on this subject.

DISCUSSION.

Dr. M. R. Muir, Detroit: Cast gold inlay work is not yet two years old, and everybody has his own little ideas, and we should have an expression from everyone here tonight who has had any experience in this work. I hoped to have some specimens to show you tonight, but I have only one which is a practical case that I made this afternoon,—a bicuspid crown with a porcelain face in it. The facing was removed and gold cast with lead pencil points in the pin holes to keep them open, and the facing is then attached by cement.

The subject of Dr. LeGro's paper must necessarily bring out the results of his

own experience, and as it is largely original it is of much more interest than if he had obtained his ideas from books and magazines to which we all have access.

The latest processes in cast gold work are being developed by dentists every day in their own offices as the possibilities of the work done, by casting gold is as the essayist says, limited only by the ability of the operator. There has been comparatively little on this work in the dental journals in the last eight or ten months; nothing important during that time in the *Items of Interest* or the *Cosmos*, with the exceptions of the results of the work done by Dr. Price, as given in his splendid articles appearing in the May, June and December, 1908, *Items*.

The seed was sown by Dr. Taggart when he addressed the Odontological Society, of N. Y., just two years ago tomorrow, giving to the profession the results of his labors and since that time it has taken root and flourished in nearly every dentist's office in the country. Numerous kinds of machines have been designed with a view to economy and the use of the cast gold inlay has been unmercifully abused by some. Dr. Hasley, in the January, 1909, *Items* says that some of the machines are so far removed in form and action from the usual workroom appliances that until seen in operation they might pass for caricatures." One's thumb guarded by a wet rag has been found sufficient to force molten gold into a mould so as to produce an acceptable inlay. Compressed air, steam, gun powder, inertia, centrifugal force and atmospheric pressure brought into action by an exhaust pump, a pill box, a child's toy tin pail swung around one's head, a pair of tongs, a yankee clock, an old fashioned coffee mill, and a hundred and one such like devices have been suggested in the dental journal for inlay castings. Just here let me quote an expression of Dr. Price:—"You are disappointed just in proportion to the height of your ideals." Therefore, I would say govern yourselves accordingly in selecting a machine.

I agree with the essayist in advocating a strict adherence to one method or machine that you know others to be getting good results with, stick to it yourself until you get results. Exactly the same can be said about inlay wax. I can get the same results with the wax I use that you can get with the wax you use and you can get the same results with the wax you use that I can get with the wax I use, which goes to prove that the wax for you to use is the wax that you know how to use.

There are several substitutes for pure gold which might be used in casting for anything but inlay work. My experience has been that nothing takes the place of pure gold for a perfect inlay. The only argument to be put up in favor of the alloy or any other material that might be used is economy, but I would not consider that, as the time consumed is the same and results are not as good, when alloys are used.

Sectional inlays are often employed to good advantage and are sometimes necessary to avoid unnecessary cutting. If there is an undercut and the overhanging walls are good and strong fill it with cement before taking the impression. After the side-walls and margins are prepared, if there still remains decay in the bottom that if removed would make an undercut, take the impression and remove the decay after. A great many are of the opinion that grooves placed so and so in the cavity and in the inlay for the cement to lodge in help materially to hold the inlay in its place but I believe that the less cement you have between the inlay and the tooth the stronger and more permanent it will be. I had that ground into me by Dr. Reeves and it is still there.

On account of the perfect fit obtained with the cast gold inlay by burnishing, in certain cases with plenty of mechanical retention one can afford to sacrifice some of the strength given by the cement and I frequently hollow out large inlays with the Roach suction wax carver to save using so much gold or to make a layer of cement over the pulp to protect it from thermal changes. Your inlay will fit better and give better satisfaction if you will clean it with hydrofluoric acid after casting. A porcelain face may be baked into a gold inlay, or the cavity can be prepared in the inlay before setting and after it is set proceed in the usual way to make the porcelain inlay.

I do not know of a better way for chilling and removing wax inlays from the cavity than the following: In the left hand hold a small abscess syringe with platinum point filled with cold water and with the right hand heat the end of a piece of copper wire about two inches long over a flame and insert it into the wax inlay—immediately then put a stream of cold water on the wire and the inlay—this holds the wire in its place. The water all going directly to the place where needed and the point of the syringe being small, the amount of water used is small. While cooling the inlay with the left hand pick up the pliers with the right, grasp the wire close to the inlay and remove. At this point clean it off with a cold air blast from your air syringe using from 10 to twenty pounds pressure. To remove the inlay from the wire, heat the wire in the center over a small flame and the inlay will fall off. A good wax inlay can easily be spoiled by hooking an exploring point into it and pulling and partly shoving it out as is necessary, especially if it fits tightly as it should. I do not think there is a machine made that will cast a plate or bridge without getting some shrinkage, enough so that it will not fit; I have never seen any, and have tried it,—unless it can be done with Dr. Price's artificial stone. He claims great things for that, and I hope that he will be at our February clinic, and I will let him speak for himself at that time. That artificial stone, if it is not perfected now, I think will be some day, and will be the only method of casting large inlays, plates or bridges. A bridge can be cast separately, the dummies, and then the parts soldered together, but I do not think that there is a machine made that will cast a large bridge or plate that will fit.

Dr. M. L. Ward, Ann Arbor: There are two points that the essayist brought out that I would like to emphasize. The first and most important one was in regard to the kind of gold. I was of the impression some time ago that only pure gold could be cast successfully. I am of the same opinion still so far as most fillings are concerned, because the pure gold admits being finished better to the margins. I am not certain now, however, that it is the only one that we can depend upon for some other kinds of work. Day before yesterday I cast a practical case out of 18K. gold plate, by cooling the mould down before casting. It appears to me that the great trouble is not entirely with the shrinkage of the gold, but in the manner of handling it. Everybody has an idea that they should cast inlays into a hot mould while in foundry work it is just the reverse, and so far as I can see, it should be so here. Gold will shrink on cooling, but it will shrink much less if cast into a mould cool enough to be handled in the hands, than it will if it is cast into a mould that is glowing hot. I believe 18, 20 and 22K. plates can be cast reasonably accurately into abutments, saddles, etc., and there will be little more shrinkage if any at all, than if they were made of pure gold. Such golds, however, will not make nice margins for fillings. If the gold is heated with the ordinary blow-pipe the whole investment is usually heated much too hot. The heating of the gold should be done with the oxyhydrogen blow-pipe, using a small flame so that the investment remains cool. Even though the small flame is used with the oxyhydrogen blow-pipe it takes only a few seconds to melt the gold to the proper state of fluidity. I cannot speak with too much emphasis about the necessity for not overheating the investment and the necessity for casting into a cool mould if we get the minimum amount of shrinkage of the gold.

Another thing of importance in this work is the pressure under which the gold is cast. I have found that all of the present investments are too weak to stand sudden high pressures and those that have been overheated are especially weak. Almost all of them, one or two of them fundamentally strong ones will stand open flame of the Bunsen burner from eight to fifteen minutes without a great deterioration in strength, though every minute or two beyond fifteen minutes seems to convert it into a dry powder. Another thing of importance in the casting process is the keeping of the gold at the proper condition as regards fluidity. All of the golds almost lose their identity after being cast the third time. They take up contamination from

the investment in the form of iron and iron is found in all of the investments. Gold will become contaminated from the blow-pipes sufficiently to prevent its casting perfectly. A good thing to correct this is to melt the gold and place upon it gradually, keeping it melted all the time, equal parts of potassium nitrate and borax. The flame should be directed onto the gold from one side until it is melted, and little by little add the potassium nitrate and borax. Usually three or four minutes is sufficient, but if it is desired to raise the karat considerably, it will take somewhat longer than this. The oxygen supplied by the potassium nitrate oxidizes the base metals and they are carried away in the slag. This is a standard dry process for refining gold and one which every dentist can use to advantage in connection with the casting process. It is both clean and handy and is particularly effective in removing iron as well as many of the other contaminations found in gold that has been used for casting.

Dr. S. Becker: I would like to hear from some one, his experience with Acolite, which I have used considerably for attaching porcelain crowns to badly decayed roots. I expected to find something in the paper on this material. I have used it considerably. In fact, I have not put on a Davis crown since June without either a gold or Acolite fitting. I have used the gold for large crowns once or twice but it takes so much gold as to be prohibitive. Acolite has a good sharp edge but has no strength. I do not like to cast gold on the porcelain, for the reason that we are liable to check the porcelain, because of the difference in expansion of porcelain platinum pins in the tooth and the gold used in casting. I do not think Acolite has been generally used for so long but what we want to know some more about it. Many people cannot afford to pay for the gold, especially in attaching Logan crowns, where you will often find there is a big space on the lingual side. I have filled these spaces by casting direct to the porcelain, and with the Logan crown I can do it very nicely with the Acolite, but whether that is going to stand I am not prepared to answer.

Dr. Muir: I think you can cast just as well on porcelain as any other way, but I do not think it is advisable. I do not think it is necessary. In the first place, it changes the color so much. I have cast some on porcelain and have never cracked a tooth, but they have all been experiments, as I have never done a practical case in that way. I think they are just as strong, and I think the tooth has more and better protection if the gold is cast on it than any other way. I do not see any necessity for checking a tooth while casting on it, but don't think it is desirable, because it is liable to change the color too much. I think it can be done just as well by cementing the facing after the casting is all complete.

I think I did have to grind the crown I am showing a little; I took just a little bit off the gold and ground the porcelain a little. There is some change due to a certain extent to the contraction of the gold. I do not think there is any machine made but that there is some contraction. In an inlay for a filling that can be taken care of by lapped margins and you can burnish it down so that you cannot detect the margin, but on a curved tooth as this is, you have to grind a little off to allow the facing to go into that gold. It may have been due to the shrinkage of the gold, and it may have been due to the distortion. I did it hurriedly because I wanted to get it ready to bring over tonight. I do not think that is any argument against the use of the method, because that tiny bit of grinding can be done with the articulating paper.

Dr. A. W. Dumas: I wish to speak in regard to the advisability of casting gold onto porcelain. I do not think any casting machine should take the credit of a successful casting of that kind; the credit should be given to the operator, who first heats his case and porcelain to the same degree of heat as the molten gold, because otherwise you have about the most powerful elements in nature, heat and cold, in contact, and unless you have your porcelain heated to the degree of your gold you are

sure to have trouble. I have been successful in many cases in casting upon bare porcelain, but I think it is folly to take such a chance. I think it is wiser to take a piece of pure gold and anneal it and burnish it over the tooth; in that way you save time and will not crack your porcelain. The cracking of the porcelain I think is due to the platinum pin in the tooth. I believe that as soon as the molten gold strikes these pins there is an expansion of the pins which causes a fracture in the tooth. You may take a Davis crown, and you can cast your metal, gold or Acolite upon it without removing, cast the whole at once, and the metal will find its place into the inside of that crown so that it will be impossible for you to take it out. From that I should infer that the cracking of the porcelain was due mostly to the expansion of the platinum pin baked into the tooth. I think it is economy of time and everything, to burnish a small amount of gold against your porcelain.

Dr. Muir: The credit should not be given to any machine for casting on the porcelain; it can be done with any machine. I do not advise anybody to do it. I say it can be done, but it is not desirable. If you will heat the case hot enough to get the porcelain so hot that the gold will not check it, it can be done in any machine. The facing has got to be hot for the same reason that when you cast on platinum or cast on gold plate, they have got to be hot so that the new gold will fuse onto them, and it will fuse onto them. This cast that I passed around has a platinum band. You cannot expect the hot metal to unite with a cold metal; the inside of the mould has got to be hot.

Dr. C. H. Land: I want to help you out a little on the casting. It is utterly impossible to fuse any kind of metal to a piece of porcelain. It was never known to happen. You can flow it over a piece of porcelain. Whenever a piece of porcelain and platinum come together, the difference between the shrinkage and the expansion of the porcelain causes the porcelain to crack from the stress on the pin. If you look at a piece of window glass upon which you see various designs, these are made by putting glue over the surface of a smooth piece of glass and allowing that glue to dry and in doing so it rips out the design. You can never fuse onto a vitreous glass or porcelain a metal that it does not change the same; it simply rips off the design. It is far stronger to cement a crown onto a metal base than to fire it on. Every Logan crown is weak in that respect. Every bit of porcelain is fused in the mass; and from the piece of metal inclosed we will always have stress upon it, so that the tendency is to burst when it is re-heated. Cement your crowns instead of fusing them. If there is no strain upon a piece of porcelain it will stand indefinitely if you do not fire-crack it. If you fire a piece of porcelain on a metal base as in continuous gum work it will change, carrying the metal plate with it; and the fractures are not enough to talk about; or it will peel off and leave a nice shining surface, and the thicker the metal the more it will fracture. To prevent fracture by the heat when soldering facings, before the gold is cold take a piece of asbestos fiber and cover the piece so that it cools slowly and it will not fracture. I have worked this hundreds of times and never had a fracture when I took that precaution.

Dr. Le Gro: I do not think that the dentists have any intelligent understanding of what is going on when they are casting gold. They know that they are getting results but do not know what the cause of it is. They have not gone into the metallurgy of gold, or effect of pressure, and that is something that we have got to get an intelligent understanding of before we reduce this to an exact science or practice. As I stated, we have a great many articles published in the different dental journals, there is but one man who has written a scientific paper, on this subject, and that is Dr. Price, of Cleveland. Of course he is in a position to go into this scientific research more than the rest of us. I am rather disappointed, therefore, that it was not more discussed from the scientific aspect. However, I expected an "experience meeting," and such meetings always give us much to think about.

THE SCOPE OF CASTING IN DENTISTRY

By R. C. Brophy, M. D., D. D. S., Chicago, Ill.

WHILE casting metals in dentistry is of by no means strictly modern origin, it is only of late, or, following the announcement of the application of the principle to operative work by Dr. Wm. H. Taggart, that it has come to be regarded with particular interest by the profession. It is doubtful, however, if, with all the interest shown at the present time, the complete scope of the work, or full field in which it is applicable, is properly appreciated.

It is not the purpose of the writer to dwell upon the casting of inlays proper, or substitutes for fillings, for that subject is being widely discussed, and is quite well understood, but I would, taking that as a starting point in consideration of my subject, follow along further and take up other things in the same field.

I have always felt that there are possibilities in the process of casting in dentistry of really greater value and importance than the casting of inlays to fill cavities in the crowns of teeth.

Making use of inlays is dependent upon the extent to which destruction of the crown of a tooth has been allowed to proceed; their applicability must be measured by the proportion of the crown remaining; there must be a given area of sound, solid tooth structure to support them. Many cases present where there is not such sufficient sound structure, and it is in such instances, in the writer's opinion, that there lies the greater possibilities of valuable accomplishments through the casting process.

It is a pity that teeth are allowed to pass beyond the pale of repair by simply plugging cavities; but the time will never come when the dentist will not meet conditions either presaging the complete loss of the tooth, or, exacting extreme ingenuity and skill in its saving. It is not so much a question as to whether the dental profession could keep everybody's teeth in normal condition, and intact, as it is a fact that it never will have an opportunity to do anything of the kind. People sometimes neglect to lock the barn door until after the horse is stolen. A great many people never entertain a thought of consulting the dentist until their teeth are so extensively involved in destruction that artificial restitution is demanded.

Then, again, the matter of casting inlays proper, applies only to those cases where restoration of a tooth may be accomplished by old, ordinary methods of operative procedure. I want to connect the casting process with those cases which no dentist would think for a moment of attempting to restore by operative procedure, those cases in which the little remaining structure, merely the shell of a root though it be, are made use of as an abutment or anchorage for a cast restoration, or the mounting thereon of a porcelain crown.

It is scarcely possible to conceive of a tooth assuming a condition of

decay, which, from a mechanical standpoint cannot be restored, if the casting process be employed, waiving, however, discussion of the many things that may be done in the way of restoration of the crown of a tooth where the root is sound and solid. I would speak particularly of that procedure which I believe constitutes the most valuable and important achievement possible in casting. I refer to the mounting of crowns upon badly decayed roots, roots where, possibly, but a shell remains, and this shell buried beneath the margin of the gum.

The method of making such a restoration is so simple that it can but appeal to all. If the shell upon which it is desired to mount a crown be deep down underneath the gum, it will be found that gum tissue has covered, and likely, partially filled it, and in that case this tissue must be crowded back by packing. The root should then be cleaned of all debris and its edge trimmed to a solid margin.

If the restoration is to be made of gold, a detachable pin crown should be used, the dowel, or pin, with the crown in position upon it, should be invested with softened inlay wax and should be crowded down into the root, the latter having first been moistened with saliva. This procedure should give a perfect model of the canal, or shell, and a perfect mould of the base of the porcelain crown. The crown may now be taken off the dowel, and the latter, with the wax model attached to it, may be lifted out, trimmed, reset, removed again and retrimmed, until finally the wax is found to be perfectly adapted. The crown should then be removed, the sprue wire attached, and the case is ready for investing and casting.

If, instead of making the restoration with gold, Acelite be used—and for these cases the writer does not hesitate to say that he regards Acelite preferable to gold—the cast may be made direct to the porcelain, or not, as is desired, and ordinary vulcanite plate teeth and German silver dowels may be used instead of special crowns with their dowels. After the restoration is finished it may be set with cement, and if the crown used be detachable, it may then be cemented in position on the dowel.

The casting process in relation to bridge work is an important consideration, but one upon which I realize that I have peculiar views. I believe that if porcelain teeth of a detachable, or removable character could be made use of, and as a matter of fact they might be, that casting bridges would be practical, but I am led to believe that unless the bridge be cast along that line that it better be not cast at all.

I have long felt that casting gold to porcelain is too uncertain and questionable to be practical or advisable. It is true, of course, that a piece of porcelain will now and then be found to have withstood the shock and the effects of the natural changes of the gold, after the two have come in contact, but I know that such occurrences are very rare. In a very great many instances the porcelain plainly shows checks. In very many instances the porcelain appears to the naked eye to be uninjured, but my

experience has shown that in almost all cases examination under a magnifying glass will reveal checks. These checks of course weaken the porcelain and make it unreliable and unworthy of dependence. I regard the casting of gold to porcelain as impracticable.

What I have said in relation to casting Acolite in crown work applies to bridge work. Acolite, owing to its low fusing point and its non-changing qualities in congealing, may be cast to porcelain without danger of checking it.

Casting metal plates in dentistry has been done in our own country for fifty years, and a study of the subject from a standpoint of evolution is interesting. Dr. James B. Bean, who was the first dentist to experiment in the work, undoubtedly was actuated in so doing by a desire to make use of the then practically new metal—aluminum—for base plates. It is doubtful if the metal was procurable at that time in sheet form for swaging. Dr. Bean attempted to make use of straight aluminum without trying to affect any change in it by alloying. When we realize that pure aluminum is not produced at the present time, we may imagine the purity of the metal he used at that early time, and, knowing what we do of the effects produced by certain oral secretions upon the straight aluminum with which we are now supplied, we may further imagine the troubles which confronted him in practice. It is quite likely also, that Dr. Bean had his troubles in making perfect casts, for he depended upon gravity to inject the metal into the matrix, or mould.

Following Dr. Bean, other men became interested in casting aluminum plates, notably Dr. Carroll and Dr. Zeller, but without commenting upon their experiences I will consider the matter from a present day status, and purely from a mechanical standpoint, in conformity to the title of my paper.

It may be interesting to some to know that as long as fifteen years ago, the writer, as well as other dentists, made use of the identical principle in casting plates that is being employed by many at the present time, in the so-called inlay casting, viz.: burying the model, using a crucible former and sprues, burning out the wax and forcing the metal down into the matrix with air pressure.

The casting of plates is an extremely important phase of dental casting, and is found at the present time to be following very closely the wonderful development and gain in popularity of other forms of dental casting. While I do not deem it advisable to make a practice of casting large full base plates in gold, there are cases where delicate horseshoe or saddle plates may be cast in this metal to advantage.

In the casting of Aerdentalloy plates, a well known alloy of aluminum, which has been proven to possess characteristics making it vastly superior to straight aluminum for the purpose, the dental profession has one of the most, if not the most important of all the many advantageous aids resultant from the process of casting.

Casting in dentistry has a practically unrestricted scope, and its value to the profession and to humanity cannot be computed.

NUGGETS OF GOLD—INLAYS.*

By O. E. Lanphear, D. D. S., Paw Paw, Mich.

OUR profession has more cause for thankfulness than any other. This we may say reverently, with no spirit of boastfulness in our own strength, but with gratitude to our Creator, who has blest us with the conditions and environment which have enabled us to achieve so large a measure of well-being and happiness for our fellows. To the members of our profession has been granted the inestimable pleasure of striking out in many new untried lines and carrying them to a high degree of excellence. We are the heirs of the ages. We have had to pay some of the penalties co-existent with the conditions in bygone civilization, and in the face of these difficulties, which have called for strenuous vigor and effort, success has attended us and we possess a fixed determination to wrest from the future the measure of success which is the reward of the faithful.

Success in the dental art has reached a great altitude through the special effort expended on the restoration of health and the mitigation of pain. These have been the constant themes of the most fertile human brains of their time, the fruits of which their possessors have laid unsparingly on the altar of human progress. Today our fellowmen pay tribute and respect to the profession built upon the results of our unceasing labors. Practical and experienced clinicians have formulated a working hypothesis, so necessary to permanent advancement in any art, and we point with pride to the acumen displayed by our profession in working out the theories. While much is accomplished by the practical clinician it is becoming more and more a necessity to thoroughly understand the theory of all technical procedure, thus placing the art as far as may be in the domain of exact science.

Our ranks include many expert manipulators in porcelain and gold, each having contributed something to the sum of professional knowledge, in cavity preparation, speed or permanency. Some few furnish records of systematic investigations with basic data to aid in reducing the chances of failure to a minimum. Too many are content to understand the "how," with no knowledge of the "why," of their methods. This accursed professional apathy keeps many practitioners from attaining the front rank and leaves them narrow. Let us be broad and liberal, discreet and discerning, willing and capable in the service rendered.

For the past decade inlaid fillings have occupied a prominent place in our work. Porcelain and gold have held the foremost places and we point with pride to our successful operators who save time and important tissue by their expert knowledge and scientific technique. While we pay marked deference to these men, many of us allow our energies to wane and our

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ambitions to atrophy. We should be able to use the inlay methods where discretion demands, for they equal

“Nature’s brag, and must be shown
In courts, at feasts, and high solemnities,
Where most may wonder at the workmanship.”

The dental art requires painstaking study and careful manipulation to obtain ideal results in gold inlays. Trained discretion in the preservation of tooth substance is as great an aid to permanency as extension for prevention or retention.

In simple cavities, the seat of the cavity should be flat and parallel to the plane of the defective surface, while the walls should be nearly at right angles to this and slightly divergent. In compound cavities, lateral retention is secured by frictional planes, dovetail extension or pin projection, that will allow the model to be removed without distortion. Any deviation from the desired planes, as pits, under cuts and spherical depressions, should be filled to within one millimeter of the surface with good cement, and carefully trimmed to allow of drawing. When this has set the cavity is moistened and the apex of a warm wax cone is placed against the deepest portion of the cavity and the remainder is pressed to place with the fingers.

In compound proximal cavities, a strip of linen celluloid or dam should be drawn tight at the gingival border for it greatly facilitates the work, especially in cases extending below the gingival line. It forces the wax tightly against the cavity walls and gives an approximate contour to a border which demands perfect carving.

The wax should be chilled and the excess removed with a sharp carver, leaving the occlusal full; now heat this surface a little and ask the patient to bite. He is then left to his own devices for a moment to allow him to give it a natural bite. When the wax is chilled again and the articulation is accentuated by carving, the proximate surface is given a full contour and a normal contact. Polish the surface of the wax and remove cautiously with a firm point and a steady hand. Give the model a critical examination and do not hesitate to return it to the cavity if there is any possibility of distortion. If assured that the wax is a perfect prototype of the filling insert a heated sprue pin in the axial plane of a convex surface. This will aid the gold to go directly to its destination *without marring the investment margins*. See that no pits remain at the union of the pin and the model. Place the bare end of the sprue pin in the crucible former in a position that will bring the wax near the bottom of the investment ring. Coat the wax with alcohol and immediately proceed to apply a thin mixture of the investment with a camel’s hair brush, forcing the investment along under the film of alcohol, thus excluding the air. *Gradually force this layer off with a thick mix of the investment*, filling the ring with the same and bring the model to its position in the ring. In five minutes, when the investment has set enough to be firm, the sprue pin can be heated a little to soften the wax, and removed with the crucible former on it. Now invert the case and place on the heater, where it is slowly brought to

the boiling point of the wax (75° C.), when the wax comes out. From this point, the heat may be carried up rapidly and some of the carbon burned out. *Do not carry the heat higher than necessary*, as it has a tendency to distort the space left by the vanished prototype. A liberal piece of gold is now placed in the crucible formed in the investment, heated nearly to the boiling point; when the force of the machine is applied it rushes down the sprue hole, forcing the air through the thin and porous investment, filling the space left by the wax and remaining there under the pressure of the machine until congealed, when it can be cooled rapidly in water. The inlay may be pickled to remove the investment material, the excess of gold cut away on the lathe and the surface given the desired polish. Then try it in the cavity. Make sure of the borders and the little details which insure the permanency of the inlay. When satisfied with the trial, remove the inlay and cement to place with a rocking hand motion, aided by the mallet in most cases. The cavity form must furnish the retention, leaving the cement to hold the inlay in position and give thermal immunity. The margin of the tooth should be cut true and as nearly at right angles to the surface penetrated as the structure of the tooth and the cavity outline will permit, then *the inlay will butt the cavity margin*, forming an ideal joint. This joint should be absolutely flush and well burnished. The margins of inlays should be accessible for convenience in working. Sharp angles at the cervico-buccal and lingual aspects of the approximo-occlusal fillings should be avoided. In occlusal cavities, the outline of the cavity should have rounded angles, to avoid the gold wearing away the corners in the investment at the time of casting. The cavities with a narrow neck are apt to show that parts of the investment have been worn away leaving the inlay full at this point. It will not go to place until the neck is narrowed at these points.

Let us bear in mind that while we have mentioned many of the salient points in the technology of the cast gold inlay, which saves frail teeth and weak enamel walls, relieves patients of many of the nerve-racking procedures incident to the placing of the rubber dam, the condensation of foil and the tedious sitting, it alone does not constitute professional success. The profession of skill, brilliancy, honor, social position or the ability to get the nuggets of gold, do not spell success. It is the frankness of expression, largeness of heart, flexibility of mind, accurate perception of difficulties and true discrimination, that makes our continued, conscientious services benefactions of the race, and bring to us the appellation Success.

DISCUSSION.

Dr. A. C. Runyan, South Haven, Mich.: I am not an expert on gold inlays but I believe that they have their special place in dentistry.

I have done more or less of the inlay work both in porcelain and in gold. I find that, as the doctor says, a great deal of the success depends upon technique, and the more that we take pains with these little details the more successful will we be with the inlay fillings.

It is claimed that there is no better filling than a cement filling, provided it did not wash or deteriorate, or become eliminated by the secretions of the mouth. Now that we can protect them with gold inlays, I think that they make a very much better

filling than any other filling that we have, except the æsthetic claim of inlay porcelain. Gold inlays are better than poor porcelain inlays. Porcelain fillings have a great many faults. We cannot use them at times where we can use gold, because of their friability; and I think, for the back teeth there is no better filling than the gold inlay, properly put in.

Dr. Lanphear: I wish there had been more discussion on this subject.

There were several important points that I wanted to see brought out in the discussion. I have been interested in the work Dr. Price has been doing in regard to the shrinkage of the mould, and as near as I can find out he shows a shrinkage of about 15-1000 of an inch, which would make quite a deficiency in a filling. If we can get an investment that expands the space at the moment the gold is cast, and there is a shrinkage of the gold, though it is under pressure, perhaps it will be nearer the ideal filling. A good many operators have used the matrix system to aid in overcoming this difficulty, and they cast into the matrix, which becomes part of the inlay. The wax is built to perfect contour and the casting process causes a very slight distortion. With this method, I think, there is nearly perfect adaptation.

LIMITATIONS AND USES OF THE GOLD INLAY.

H. M. Semans, A. M., D. D. S., Columbus, Ohio.

WE have passed the experimental stage so far as the uses of the gold inlay is concerned, and its limitations are controlled only by any other time proven filling material that will suit, in the judgment of the operator, the necessities of the case.

This subject does not exact from me arguments against the use of gold inlays, rather I am expected to observe their already proven use while I try to show why and how and where their use is called for in filling tooth cavities. Please keep in mind that the older inlay, porcelain, at the hands of skillful operators has established itself not only as our ideal æsthetic filling material, but that it is recognized as a most excellent permanent stopper, for thousands of such inlays are holding forth without carious returns about their environments. Also keep in mind that many more thousand gold fillings are still today showing to us that they are capable of perfect sealment of the cavities they occupy. And there are none of us but will give thanks to the persistent efforts of those few enthusiasts fifty years ago who by such efforts gave us amalgam, up to the present time our greatest posterior tooth preserver. Only a few years ago we had no other thought than that these two, gold and amalgam, placed properly against tooth walls, were par excellent, without limitation in the proper use of each in its place; in fact nothing else was used except guttapercha and cement. But, hold! like the crusaders of old I have found the talisman, cement oxyphosphate of zinc, once a temporary make-shift for frail teeth, cheap fillings, nervous, sickly patients, stopper of dressings, scorned by all as a permanent filling material, except by the occasional few who recognized an æsthetic worth to it, even though constantly replaced.

It is hard to tell whether it was the solid block inlay idea of itself, or else something to help cement to be retained in a cavity, that has

brought about inlaying of cavities: probably the groping about and working out of both ideas. However, today we accept the fact that inlays without oxyphosphate of zinc are as impossible as moon beams at high noon.

First, then, where are gold inlays uncalled for? In all cavities unlined with oxyphosphate of zinc. We all know that, only let us always keep it in mind. Next, in all the six anterior teeth which will warrant porcelain inlays, chemical porcelain cement, and gold fillings? We are now occasionally hearing the remark that porcelain inlaying has had its day. Yes, some kinds of porcelain inlaying has had its day, and most of us no doubt have helped some of our own and others' porcelain inlays to have their day, with a sigh and a-lack-a-day. But porcelain inlaying has improved so greatly, and bad results have taught us so thoroughly, that we know anterior tooth cavities which allow good thick edge approach of the inlay, where necessary, can be, and are, effectively and beautifully filled with baked porcelain. Chemical porcelain cements, while yet in an experimental stage, are showing, under wise and careful selection of the place, some very good results. All small cavities in anterior teeth which are not conspicuous and in many cases large proximal cavities which are more or less inconspicuous, do not call for the gold inlay. It is still good practice to fill such cavities with gold in the good old-fashioned way. The wide wedging and broad cutting away of tooth structure for inlays is not warranted. It would seem then, that I have very nearly eliminated the gold inlay for the six anterior teeth: especially for aesthetic reasons, they should not be used, if possible to avoid doing so. Yet under certain conditions a thin frail tooth, not having a great amount of labial surface involved might warrant a gold inlay, with iridio-platinum pin and proper lingual preparation brace against stress and strain. We all see mouths with teeth more or less shortened, incisive ends badly worn down, the dentine between the enamel layers of hard to soft decay always connecting up with proximal cavities or leaking fillings: gold inlays indicated there? Yes, many times. Yet, ideally, what about the jacket porcelain crown?

The gold inlay with porcelain, baked or inlayed into it, as advocated lately, may work out to be a most excellent combination for anterior and some posterior restorations: if so, then to that extent do we remove a limitation.

Posteriorly, gold inlays are almost unlimited. The cost of a filling of course is a tremendous factor in our work, so I must immediately qualify that statement. Amalgam can be so quickly inlayed in almost all posterior cavities, and made very effective, so that it removes the necessity of gold alone as a posterior inlay. But we must remember that it is amalgam's cheapness over gold that gives it its great advantage. Laying aside wax fillings for leisure hour casting, or laboratory assistant casting, and the use of impression material with Price's stone cement models for subsequent filling and casting has given us great conservation of time. The ease with which amalgam is manipulated as against the labor and time taken

to mallet in a posterior gold filling has cost almost all users of amalgam enough money to have bought and almost maintained that coveted automobile, or given an occasional trip abroad. In the minds of many dentists, gold malleted fillings used in the posterior teeth have become ancient history. Yet the gold filling can still and should be still used in most of the pit and fissure cavities. On the other hand we can average up better contour and contact points with the gold inlay; our grooves, cusps, fossae and ridges can be perfect reproductions; the restoration of all frail and extensively decayed teeth is now almost universal; while as for ease and comfort to both patient and operator, there is no comparison. Gold inlaying, then, in posterior teeth, has wonderfully enlarged our field for better restoration.

We are constantly being told today that there is but one thing that stands in the way of inlays as our ideal fillings, and that is the always possible dissolution of the cement. This objection can be overcome in several ways. First, prepare the cavities right and obtain a correct inlay; second, set the inlay as Dr. Taggart tells us, with first a rocking motion so as to flow or rock out all the cement possible, followed immediately with firm, steady pressure for twenty or more minutes. A good inlay in a properly prepared cavity should almost, if not quite, eliminate the edge difficulty. But if it does not, and it often does not, then finishing bur burnishers will spin the gold over the margins. Lately we have been told that it is well to trumpet or bevel out more than we used to do, and this seems to be good advice. Our gold will burnish out or spin out under the dull bladed burs, polishing to a smooth nicety with disks and strips, as of old. Also we have lately been advised against the removal of quantities of our gold, both to economize and to give place for cement to get into to help hold, following the line of argument that the closer our inlay walls approximate the cavity walls, and the less cement we retain, the greater is the power of resistance; and that sounds like most excellent advice and a scientific truth, for small and medium sized inlays at least.

Pure gold seems to prove itself by all odds our best material, with 22K. plate a second choice. Pure gold has proven itself to be so much stronger and better able to withstand stress and strain than was expected of it.

Dr. Price's use of stone cement models to cast into has given us a splendid way to obtain perfect proximo-cervical enamel edge adaptations, and very much of the trimming can be done before placed in the tooth.

We are all quite familiar with the lamentations from some dentists over the fear that operators would soon lose their skill and cunning because of the fact that there will be much abandonment of gold fillings in favor of the inlay. Feared as much myself. But while delving lately into some old magazines, I was very much entertained over the fears of the old regulars that the new fandangled material, cohesive gold ("works just like putty"), as against the continued use of gold foil (non-cohesive) would entirely eliminate skilfulness and manipulative ability from the

dental profession. No indeed, it is going to take great skill and manipulative ability to place a perfect gold inlay, one that retains its seat immovable before cemented, except in the direction of its desired withdrawal, one that closes of itself the margins, one that will conserve the tooth for years, one that will restore the contact point so splendidly that there will be no "meat spaces" with the terrible concurring ailments of gum and alveolar tissue, one that will present perfect anatomical restorations of all its surfaces, one that will protect enamel walls from fracture, in fact one that will do that which we most desire, save the tooth in an ideally practical manner.

EARLY ATTEMPTS AT INLAY CASTING

By C. V. Vignes, D. D. S., New Orleans, La.

SOME four years ago, before the present methods of gold inlay casting came in vogue, and before I had heard of cast gold inlays, I made some attempts at casting gold in a mould, a description of which I believe, will be of interest in a number of the SUMMARY devoted specially to the subject of Cast Gold Inlays.

While the method I used was somewhat different from that now employed, and while I was to a great extent, unsuccessful, yet I was fortunate enough to cast a fairly good inlay. And having been so close to the right way, I feel pardonably proud of the pioneer work that I did in that direction, although it was abandoned as impracticable, even unsuccessful.

Working upon the idea that the duplicating in gold of wax models of missing parts of teeth would greatly facilitate our work, I made the following experiments with the doubtful success above mentioned:

After obtaining an impression of the cavity in pink paraffin and wax and carving to contour, as is at present done with the special inlay wax, I attached a small rope of the same material to the model to form a sprue and proceeded to invest the case. The investment was made small and without the ring that is now used in investing inlay cases. After the setting of the investment, a funnel-shape depression was made around the sprue.

So far I was on the right road to the successful casting of the gold inlay; but my idea of the sprue was not to force the melted gold through it, nor was the carved funnel leading to the sprue to be used as a crucible in which to melt the gold prior to its being forced into the matrix formed by the disappearance of the melted model; but the funnel and sprue were made to facilitate the working into the matrix of gold filings. My idea being that if I could fill the matrix with gold filings and heat the investment (which was, for that purpose, made very small) to the melting point of gold, that I would attain the result sought for; but in this I was mistaken, for I succeeded only in obtaining a globule of gold.

Following up the first idea, I thought that if I could put a gold lining on my model that I would meet with ultimate success. To do this in a simple manner and to obviate the necessity of burnishing foil into the cavity, after obtaining my model, I rolled it into gold filings, reinserted it into the cavity, reburnished it and proceeded as before. By this method I was more successful than in my first attempt. Failure was due to the fact that not enough of the gold filings investing the model would adhere to the investment to give the complete metallic lining looked for. The casting, while it had the general shape of the cavity, was too defective to be put to practical use. Hence the abandoning of the idea.

RESTORING TEETH FOR CROWN AND BRIDGE WORK BY CASTING *

By C. Jensen, D. D. S., Mt. Gilead, Ohio

NO doubt every dentist has a method of his own in restoring teeth for crown and bridge work, but I think the most simple way is that of casting by the following method: First, see that the roots are in a good healthy condition, then prepare canals for pins, place pins in position, warm wax, build up and shape wax model so that you can fit crown over same, cut down wax model so as to form a slight shoulder on which crowns rest; this can be done after casting, if desired; withdraw pins with wax model, invest and cast, using Acolite Metal; finish up cast as desired; make band as for ordinary gold crown, soldering piece of gold over end of band. Cement cast in position, then place band over cast, place warm inlay wax on band, have patient bite to obtain perfect occlusion, then carve up cusp, remove crown and cast cusp, finish up crown and cement in place, and you will have a tooth that will be serviceable in every way.

THE CAST CLASP

By W. B. Caldwell, D. D. S., Hamilton, O.

The Cast Clasp is the proper and most accurate clasp that can be made. After securing a perfect cast from a plaster impression, proceed to burnish No. 40 tin around the teeth to be clasped, which will keep the wax from adhering to plaster tooth, then take my inlay wax and press around the tooth, carve to the desired shape, then attach a small piece of wax for a lug, remove, place on sprue wire, and invest; use regular clasp metal for casting. Cement clasps on case before setting up the teeth, to hold them in position.

By using this method you will have a denture, that, when inserted, will give a very pleasing result; it will not spring, but will be absolutely firm.

CONVENIENT CRUCIBLE TONGS

By C. Jennison Palmer, Mazonianie, Wis.

Convenient crucible tongs that are perfection for handling hot crucibles, moulds, etc., can be easily made from any spring wire. Bend your wire to the shape indicated in the illustration, making the twist, or spiral, a little larger than the crucible.



If you will take the trouble to make one you will be so well pleased that it will become a permanent fixture in your office.

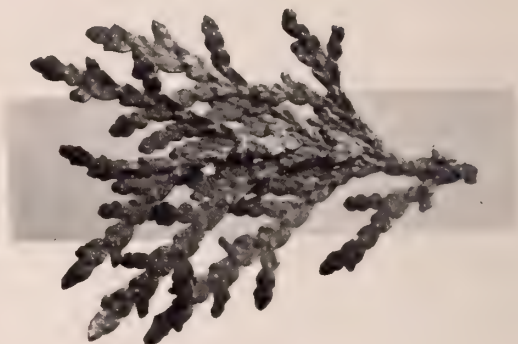
METHOD OF REPRODUCING FLOWERS, INSECTS AND THE LIKE BY CASTING

By T. C. Hutchinson, D. D. S., Decorah, Iowa

AS time goes on the science of art and invention are making rapid strides towards producing wonders in the mechanical line, all for the benefit of man, to aid him in accomplishing work more rapidly, in doing it better, and at the same time making work easier on the man. This is certainly an age of invention and the dentist who thinks that he knows all about the casting of inlays, crowns, etc., has yet something along these lines to learn.

With the invention of casting, as brought out by Dr. Taggart, the dentist does his work more rapidly and in the hands of the average man, more perfectly, than by the use of former methods of accomplishing the same results. The dentist has more time in which to rest and to occupy his time with things of interest, and the writer knows of nothing that would give him all of this, better than the making of metal flowers, etc. To practice this work you will not only find pleasure in the work but you are bound to learn something relative to your work in casting plates, etc. The illustrations here presented of the cast figures will give you an idea of its possibilities.

In a few words I will tell you how to go at it: Take any flower, no matter how delicate it may be, and immerse it in a mild solution of sandarac varnish, shaking the surplus off by taking hold of the stem; then mix the investment material, and with a camel's hair brush paint the top of the petals as you would your wax inlay. Next, if it be a flower of several petals, pour some of the investment material in the palm of your hand and lay the flower in this and pour more investment over it; jar your hand





and the investment will fill up all of the interspaces. (Note that the coating of sandarac attracts the moisture of the material.) Having poured some investment in the bottom of your flask take the partially invested flower by the stem and lay in the flask and then pour the flask full. Use the stem of the flower for the sprue. Make the crucible form for your metal the same as for inlay work.

In burning out the flower, which is placed as close to the bottom of the flask as possible, put your blast heat on the investment instead of the flask. You will have to make a cast flower to learn how to ascertain the time required to burn it out. With the heat directed near the flower one should not consume much more time than it would take to burn out the same amount of wax.

PRACTICAL SUGGESTIONS

CASTING, WITH SPECIAL REFERENCE TO CASTING ON PORCELAIN.

W. C. Gillespie.

The process of casting metal under pressure has opened the greatest field of possibility for saving and restoring teeth that the dental profession has come into in many years. The casting machine stands next to the dental engine in line of improvement in dental equipment and in variety of uses to which it may be put.

There are countless numbers of devices for casting metal under pressure, but all are variations of four basic types—those that utilize centrifugal force, suction, compressed air, or steam pressure.

The application of pressure casting—a very old process—to dental art will raise the general average of tooth-saving ability, practical merit, and artistic product of the profession because it will enable the less skilful practitioners to form in plastic substance and reproduce in metal better dentures than they were able to do direct in the more refractory substance.

Casting is neither an experiment nor a fad; neither can it be conducted on the nickel-in-the-slot basis. A few porcelain facings or teeth and a little scrap gold dumped into the machine before you go to dinner will not be a beautifully finished bridge when you return. Brains are as essential to successful casting as a properly constructed casting machine and necessary materials.

The limitation of the application of casting depends entirely upon the ingenuity and skill of the one who employs the process in constructing dental restorations. By this means anything of which a mould may be obtained may be reproduced in metal with ease.

Castings consisting entirely of metal, such as inlays or all-gold bridges, may be produced; or gold may be cast directly in contact with porcelain surfaces without a previous adaptation of backing. A simple inlay or a six-tooth bridge may be cast with the same ease and same amount of labor in so far as the casting is concerned.

The amount of time required to cast an inlay may be as long or shorter than would be required to condense foil in the same cavity; but the physical labor is not a tenth part so strenuous, and the patient will rise up and call you blessed. More patients may be seen in a day, because when the wax model is obtained the patient may be dismissed and the casting made when there is nothing else to do.

The advantages of cast gold over welded gold is too well understood to need comment, and where the inlay is preferable to a condensed filling depends entirely upon conditions to be met in each case.

The time required to construct a bridge by the process of casting is very much less, as a rule, than that by soldering, and the time and labor are just as much less as would be necessary to do the things avoided by the process of casting—namely, greater amount of grinding porcelain bodies, backing, making dies, swaging cusps, waxing cusps in position, coaxing solder to go where you wanted it and grinding off the excess solder you knew you did not need but were afraid not to put there.

The time required to wax up, invest, dry out, and heat up is the same for either process; but the actual casting requires much less time than building up the amount of solder would do.

Grant, for the sake of argument, that the *time* required by both processes is the same for a given case, the results obtained, labor and material saved, and avoidance of fatigue and discomfort to the patient place casting far ahead of condensing fillings and soldering crowns and bridges.

The dentist who casts only inlays is certainly blind to the possibilities of a simply wonderful and wonderfully simple process which he is employing only in its most insignificant application, as valuable as the process of casting inlays may be. And the dentist who does not cast at all is either utterly non-progressive or too cautious for his own and his patient's best interests.

The process of casting, intelligently employed, is thoroughly applicable to the construction of shell crowns, all-gold bridges, retaining appliances for regulations or pyorrheal teeth, porcelain-faced crowns, bridges wherein porcelain facings, ordinary rubber-plate teeth, diatoric teeth, saddle-back teeth, removable-pin crowns, or Logan crowns are employed for abutments and dummies and for adapting Logan crowns to roots.

Any type of porcelain tooth may be cast upon without backing, but care should be exercised not to use a tooth with pins soldered in position or a pin of composition metal that might have a fusing point below that of gold.

Backing as employed in the old process was to give a surface upon which solder would flow evenly and not ball up. It had little to do with the prevention of checking of porcelain, however contradictory that may sound to the teachings and accepted theories of the past. A direct contact of porcelain with heat or flame will not cause checking, provided the cold body is not thrust suddenly into a flame or furnace, but is permitted to heat gradually at first. It may then be carried to a degree considerably above the fusing point of pure gold; and if allowed to cool gradually, no checking will occur, though this be done repeatedly.

Borax never yet caused a piece of porcelain to check, except indirectly; yet this statement would be regarded as damning heresy by the old masters. These things I have proven by hundreds of tests and experiments during

a practice of nine years and four years' experience with a porcelain furnace. While writing this paper I have had in my electric furnace an ordinary plate molar tooth, a Logan crown, and two diatoric molar teeth, which were rolled in damp powdered borax and placed in the furnace covered with a layer of borax, and the hole in the diatoric teeth filled with it. A nugget of pure gold was placed with them and fused, and the teeth came out without a check, but were most beautifully glazed on surfaces that had been ground with a stone. The borax may unite with the porcelain and cause it to become more brittle if carried very high, but the experiment is cited in proof that it does not directly cause checking.

Checking of porcelain is more often caused by unequal expansion and contraction than anything else. This is due to lack of uniformity of distribution of heat or the sudden heating or cooling of the surface or part of the porcelain body. Different degrees of heat produce different degrees of expansion and the surface or some portion of the body of porcelain heating or cooling faster than the interior or some other portion of the mass; and porcelain being a low conductor of heat, an unequal stress is set up that is relieved only by fracture.

Fracture is also caused by permitting molten solder in soldering or molten gold in casting to flow around an edge, and in the contraction of cooling a grip is set up that will break any porcelain made. Such fracture is due to improper waxing up of the case for either soldering or casting.

It is also claimed that a metal pin in a porcelain body—such as the post of a Logan crown—will expand faster than the porcelain, and thus cause fracture. That claim sounds plausible, but is little more than sound, for a degree of heat that would expand the metal sufficiently to do that would have already fractured the porcelain by suddenly expanding the surface. Also where there is a post baked into a tooth heat will be conducted into the center of the mass by the metal as well as being absorbed by the surface, and the distribution will be more uniform than if the post were not present. If the heat were applied to the post directly and conducted to the interior of the porcelain while the surface received a much lower heat, then the expansion of the post and the layer of porcelain surrounding it would be faster than that of the surface, and fracture would result. But to do that would require considerable trouble to bring about something nobody wants.

The fractures indirectly caused by borax are brought about by a union of borax with the porcelain, causing it to lose its elasticity and become more brittle, as is the case when gold is alloyed with some base metals. This loss of elasticity renders it less capable of resisting the stress of expansion and contraction, and a slighter inequality of temperature will cause a fracture, than if the integrity of the porcelain had not been impaired.

An inlay or all-gold casting of any nature may be successfully cast in a comparatively cool or a cold mould, as is proven by castings of iron and brass foundries. But to cast upon porcelain without fracture the mould must of necessity be brought to such a temperature that the porcelain bodies

contained will be subjected to no undue strain of unequal expansion by sudden contact with molten gold of much higher temperature.

The investment ring is readily raised to a red heat; but investment material is a low conductor of heat, and several minutes will elapse before the heat is distributed throughout the mass. So, unless sufficient time is given, the porcelain in the mould will be several hundred degrees cooler than the surface, and the molten gold forced into the mould will fracture the porcelain just as cold glass fractures by sudden contact with hot water. Get the porcelain in the mould thoroughly hot and you may cast all the gold on it necessary for any denture ever put in the mouth, and the tiniest facing will never be checked if properly waxed and invested. No flux is needed for any cast, and borax when fused is very sticky and, uniting with the investment, interferes with the entrance of gold into the sprue-hole.

Logan crown joints may be fitted as accurately as the margins of inlays, and thus they become the most perfect crown restorations known to the profession, and may be perfectly adapted to roots gone far below the gum line all around or at any point. Molar stumps in the same condition may be easily and beautifully restored the same way by placing a pin in each canal and using plate teeth with pins baked in or diatoric teeth. No fear need be had in casting into diatoric teeth, for the molten gold enters the recess in them at its maximum expansion, and the contraction upon cooling makes the post thus formed slightly smaller.

Removable pin crowns, such as Justi's, the Davis, etc., have no lateral openings, as have the diatoric teeth; consequently the molten gold will not enter and completely fill the recess provided for the pin because there is no avenue of escape for the air caught in the recess. It, therefore, is better to remove the crown from the wax before investing, and the porcelain need not be subjected to heat at all, but may be cemented on the post after the gold that perfects the adaptation to the root has been cast onto the post.

To use such crowns for dummies, clip the post off to the desired length, insert in crowns, wax crowns in position, chill with ice water, slip crowns off posts, cast, and cement crowns in place, and you have a most beautiful and practical case. Crowns and dummies thus constructed are far less apt to break away than those backed and soldered, for they are supported by perfect contact of gold at every point, while a backing touches only here and there, and their retention depends almost entirely upon the strength of the pins baked into the porcelain. And if one should break, grind up and cement another on the post left standing.

Pure gold should be used for inlays and 22-karat gold for everything else. In casting inlays and shell crowns do not waste gold by casting them unnecessarily thick. Hollow inlays are easily made, a much stronger retention is secured, and a greater thickness of cement protects the pulp from thermal irritation. There is on the market a device consisting of a hollow metal bulb, with small extending point, through which a hole extends back to a tube to which is attached a rubber tube with a mouthpiece. This

end is taken in the mouth, the metal bulb is heated, and when the hot point is touched to the surface of the wax model to be hollowed out, the melted wax is instantly sucked back into the bulb, leaving edges as clear-cut as if cut with a knife. The same thing may be done with an ordinary hot-air syringe or chip blower having a bulbous nozzle. Solder to the nozzle the shank of a hypodermic needle, having bored out the needle with a small drill. Connect the rubber bulb to the metal tube with six or eight inches of rubber tubing, so the bulb may be worked with one hand and the metal point directed steadily with the other. Mount the wax model of the inlay on the sprue-pin fixed in a base to hold it steady, and then with the point heated suck out any kind of undercut or hollow you desire.

This is but a small part of the merits and possibilities of the process of casting as applied in dentistry; but too much time cannot be taken up with one writing.—*Dental Headlight*.

REMARKS ON CASTING

Robert N. LeCron, London, England

At the present time the cast-plate seems to hold the center of the dental stage amongst the recent reproductions in metal, especially in England, where plate-work flourishes to a greater extent than in any other country. Hence those interested in the experimental stages of casting are called upon to answer many questions as to the reasons for this, that, and the other regarding the results, possibilities, and the future of the cast-plate.

This branch of the work still being in its infancy renders some of the questions asked practically impossible to answer. We can only hope to arrive at definite conclusions after a long series of experiments along practical lines, not alone from a demonstrator's viewpoint but from conclusions based upon practical work in the mouth of the dentist himself. Casting under pressure is ancient, yet it is a new idea as applied to dentistry today, and like all new things, is being worked to death, just as porcelain work was misapplied in many instances; but like all things abused it shall find a place amongst the branches of dentistry according to its merit as tested by time.

The echo from all sides seems to be complaint as to the casting of thin gold plate. It seems strange that so much stress should be laid upon the idea of a *thin* plate. True, in the case of gold the thin denture is that which is desired and necessary, but, nevertheless, it is curious that a thin gold plate, full or otherwise, should be the source of so much trouble and comment, when some of the following details are taken into consideration. From a casting standpoint only, the thicker the plate or the more bulky the object to be cast, the greater the air space or cushion within the mould to get rid of, after the wax or object has been burned out and the greater the amount of metal necessary for the casting of same, and in like proportion the greater the surplus metal required, consequently a greater heat must be

used to melt this bulk of metal and a still greater care to see that it is not only molten but in a proper condition to flow into a mould. Then, too, the greater the mass of molten metal over the gate openings,* especially with gold or any of the heavier metals, the greater the liability for that metal to sag or even flow into the gate or gates before the pressure is applied. Hence, the thinner the plate or the object to be cast the less the difficulties and the easier and more certain the result.

One of the most important factors in casting, regardless of the method used, whether it be by gravitation or by pressure is the getting rid of the air from within the mould quickly and with the least possible resistance to the escape of that air, as the molten metal enters and spreads to the remote parts or crevices of the mould.

While watching various demonstrations on casting, I have heard the question asked and have been asked many times myself: What becomes of the air cushion within the mould? Demonstrators must have an answer ready at all times, otherwise they are liable to find themselves in an awkward position. Some insist that upon heating up the case the air within the mould becomes rarified—and so it does; but, not to the extent of producing a vacuum, as sometimes implied, or anything approaching such a highly rarified condition. If it were possible to produce a vacuum—the casting apparatus with the method of melting the metal in a crucible directly over the gate openings would be practically useless. If such was a fact, upon melting the metal upon a flat crucible-like surface of one of these highly heated cases, one would naturally expect bits of the molten metal to be drawn into the mould as parts melt and fall away from the yet unsettled portion, instead of melting gradually and remaining in a liquid mass over the gate openings, until a positive pressure be applied.

Perhaps the above is the cause of some failures, where the case is heated until it glows red from within through the gate openings. In speaking of extensive castings where fifteen or more hundredweights of heavy metal are used, capillary contraction is not sufficient to cause the molten mass to globulate to any great extent, far less overcome the suction from beneath, caused by the supposed vacuum within the mould.

The air surrounding the molten mass becomes more and more rarified it is true, as the intensity of the heat increases for melting purposes, and no doubt, theoretically overcomes and counteracts the vacuum within the mould which space has had a greater or less opportunity to cool while melting the ingot. (At least this is one explanation set forth.) If the above be a correct theory the question then arises: Why, if the mould be ventilated, is the molten metal more liable to sag into the gate openings, or to actually flow into the mould without the application of pressure providing the mould be sufficiently vented than in a case where mechanical vents are lacking?

*The words gate, lead and runner in this article are used to express what is generally termed sprue.

For instance, before Doctor Taggart conceived the idea of casting as it is now applied to dentistry, some were casting into matrices. Shortly after this method was given out, but not known in detail to the profession generally, many more were experimenting along these lines of gravitation.

This method is known to all and simply consists of a mould with a vent leading from the same to the outside of the investment, and a large gate opening into the same. The metal, instead of being melted over the gate opening, was melted in a crucible to one side with a lead or avenue to the large orifice of the gate opening. As soon as the molten metal was in the proper condition to flow, the case was tipped to one side allowing the metal to flow into the gate or runner and gravitate thence into the heated mould. This method was applied only to small castings, and the success of the same depended not only upon the thorough heating up of the case, a large gate and plenty of metal, but also upon the vent opening to allow for the escape of the air from within the mould. These cases were heated extremely hot, yet the rarification of the air within the mould thus brought about was not sufficient to secure a perfect result in any instance, unless there was a vent from the mold to the outside. One realizes quite readily how difficult it is to pour water or any liquid into a bottle or closed flask where the air contained within must escape from the same aperture through which the liquid is being poured. If, however, there be another outlet to the atmospheric pressure within the flask the procedure is quite simple.

With castings such as poured by the working jewelers in cuttle-fish bone, and those on a larger scale in foundries into moulding sand, some of the important details are as follows: *Sufficient vents, a large runner*, depending on the size and the complication of the casting in hand, and *sufficient bulk of metal in a thoroughly molten condition to flow*. At least these were the prime factors most impressed upon my mind while taking a course in a moulding shop. All necessary on account of the mould being cold, and the flow of the metal depending alone upon its own weight and surplus behind called the runner and sufficient access to all parts of the mould to enable the liquid mass to spread quickly to all parts without interference from the air within.

Though a mould be well vented if it be filled from the top, the casting is liable to be full of blow holes. In such cases dense castings may be obtained by giving an extra length at the top of the mould away from the runner—the unsound portion being thus formed in this extra length and cut away afterwards as the deadhead.

In casting a metal under pressure, the conditions are different and allow and necessitate certain changes or deviations from the old method: however, it is always well to bear in mind the law of gravitation and the details governing cheoplastic art.

On account of the metal being melted in a crucible, directly over the opening or lead into the mould, instead of pouring the liquid mass into a runner—this lead or gate must be much smaller in diameter. If too large

the metal is liable to sag into the same; if too small the construction offers too great an obstruction to the flow of the metal. With small castings, it is remarkable what a small gate opening the metal may be forced through.

I have been trying to determine by a series of experiments, not yet completed, the *size, length* and number of the gate wires necessary for the various castings in the different metals; for each metal allows of a different treatment. With aluminum or any of the lighter metals, most any size gate seems to answer the purpose; but as there is no tendency for these metals to sag a very large gate will be found most useful. The heavier metals in large castings require more care in the selection of the gate wires; with such metals as tin and Watts metal that melt at a low temperature and remain liquified for some considerable time, smaller gates may be used than with the same case in gold that solidifies quickly.

If attempting a large casting in gold through one lead, there is an influence towards using a large gate wire, thereby rendering a failure more possible. Hence I prefer to use two or more smaller gates leading to various parts of the mould to minimize uncertainties. Casting a metal into a mould in a bulk, is quite different from that of casting the same quantity where it must spread for some distance from its entrance into the mould.

In short, with the data to hand, I can but say that I adhere to the following details as near as possible until I satisfy myself more fully on this subject, *i. e.*, the heavier and the greater the bulk of the metal to be used with the exception of tin and Watts metal and similar metals and the thinner the object to be cast, the smaller the gate openings and the greater the number of the same radiating from a common centre to various parts of the mould and last, but by no means least, the flatter the crucible or surface upon which the metal is to be melted.

Certain stress has been laid upon the subject of ventilation, yet a few more words may be added. There are many methods whereby this important procedure may be accomplished. With small work, the porosity of the investment should be quite sufficient. By the word small I not only imply inlays, but crowns, bridges—in fact any design within the radius of two and a half inches. Larger objects may be cast relying upon the same escape for the internal gases, in which cases the procedure of investing is an important detail, *i. e.*, to be certain that the distance through the investment from the top down to the mould is greater than the distance from the mould down through the base, and where the metal must flow for some considerable distance from the entrance of the gate openings into the moulds, to be careful that these remote parts be *quite* near to the base, so that as the metal enters and spreads to those distant parts the air confined therein is forced through but a very thin layer of investment to the outside of the cup; and the pressure from above has little chance of driving air through the thick investment over these parts before the metal spreads to the same.

The air within the mould is either taken up by the investment similar to a sponge, absorbing water, and like the sponge, it has a limited capacity.

after which the remaining air must be driven through the investment to the outside or remain within with the liability of causing blow holes by reacting upon the molten mass or defects by not allowing the metal to spread. Any air driven out into the investment is driven there under pressure; hence to further assist the escape of internal air or gases I find it quite convenient to perforate the lower strata of investment through into the mould with a fine, smooth broach before the wax or object is burned out. To leave these mechanical vents open is liable to cause trouble if a heavy metal is to be used; by rubbing some of the surplus investment over the base these holes or vents may be temporarily stopped to hold the air cushion within, which in turn prevents, along with other details, the metal from sagging into the open gate while being melted. As soon as the pressure is applied for casting, these slight stoppings blow out, leaving open rents through which the air may pass with the least possible resistance.

If there is any one detail in the mechanical process more important than another, I should say that it is the melting of the metal. There is a certain condition of a molten metal at which that respective metal will cast to the best advantage, *and it is not the boiling point*. Any ordinary blow-pipe may be used that will, with the proper manipulation, melt the metal quickly with a strong blue flame; in no instance should a large smoky flame be used, for it only tends to oxidize and spoil the working of the metal. Once the metal has been melted, one should not be too anxious to cast, but should employ a small soft flame for a short time upon the already molten mass until certain it is in the proper condition to flow into a mould. Take, for instance, in the ordinary casting of zinc and lead for dies, etc., considerable care is taken that the molten metal is not bubbling from being too hot and, on the other hand, not sluggish from being too cold before pouring. If the metal be in the proper condition one need not be in a great hurry to apply the pressure, for it will remain in a liquid form some considerable time.

In conclusion, simply because the molten metal is to be driven by force into the mould is not a sufficient reason for being careless about the melting of the metal, even in such simple castings as inlays, and yet expect an apparatus of any description to duplicate perfect castings under such adverse conditions.—*Dental Brief*.

INLAY SUCCESS.

C. S. Van Horn.

It would be inconsistent and unreasonable to expect permanent success in each and every case of extensive inlay restoration, since much depends on the general environment, the habits of the patient, unforeseen accidents, and the ability and inclination of the patient to appreciate the effort that is being made to prolong the usefulness and comfort of a very important organ.—*Cosmos*.

SOME PHASES OF THE CASTING PROCESS.

C. S. Van Horn, Bloomsburg, Pa.

To test a pattern wax hold a piece in the mouth until it assumes body temperature, when, if it becomes plastic, susceptible to change on moderate pressure either by the teeth or fingers, it is not suitable for the purpose for which it was designed. There is a long train of maladies attending the use of a plastic wax that may be largely or entirely eliminated by the use of a non-plastic wax.

Assuming the cavity to be approximo-occlusal, involving all or part of one or more cusps, either of bicuspid or molars, the wax, which has previously been softened in water at 183° F., is quickly thrust into the cavity and moulded quickly to place, and the patient directed to bring the teeth into normal occlusion, when with the fingers and proper instruments the buccal surplus is pressed into contact with the buccal wall of the cavity, the instrument being pressed into the interproximal space, thus forcing the wax into contact with the cervical margin of the cavity. As a generous surplus of wax has been used we have a rather uninviting appearing mass, which is soon reduced by rough carving to something like normality. In carving it is of the utmost importance that the pattern remain stationary in the cavity, *i. e.* without moving and rubbing against the cavity walls; the best way to prevent this is to carve the occlusal surface before disturbing the contact of the pattern with the adjacent tooth. The support given to the pattern by the adjacent tooth, together with properly directed force in carving, enables us to make the most extensive restoration with seldom an appreciable movement of the pattern. After the occlusal surface has been carved, our attention is directed to the lingual margins, then to the buccal margins, and lastly to the cervical margins, all these margins being finished flush with the square tooth-margins for reasons previously described.

We now have a pattern—not an impression—carved to form, except that it has a contact surface—not point—with the adjacent tooth, and is unpolished. The polishing should be done in the same order as the carving: First, the occlusal surface is gone over, touched where necessary with the carving instruments to bring out any artistic lines, and highly polished; then the lingual and buccal margins. Then with a pellet of cotton wet with cold water and held against the occlusal surface to prevent any movement of the pattern, a hot, very thin flat instrument is passed between the adjacent tooth and the pattern, and the abnormally large contact surface converted into a normal contact point, and polished with a wisp of cotton; the teeth having been previously separated, as they always should be, to admit of a subsequent normal contact being formed.

If all the steps have been followed with precision and a high regard for artistic attainment, we have a beautiful restoration of the lost part in wax.

To extricate the pattern an explorer is usually employed, though any

of the well-known methods may be used, being especially careful to prevent the slightest marginal distortion. Here again it is of advantage to have square margins where sheltered, for it is manifestly easier to remove without distortion a pattern with square, well-defined margins than it is to remove one with feather-edges. The pattern is then attached to the sprue and examined under a magnifying glass to ascertain its perfectness, and if it is found to be flawless in its marginal impressions any carving which may be deemed essential may be done on the cavity side—and I might say right here that it is seldom that the cavity side of the pattern should not be carved, believing that by so doing we increase the efficacy of the finished product. This carving on the cavity side may be easily and expeditiously done with a light, sharp lancet or a bur in the engine, or a combination of both. The finishing touches being completed, the pattern is ready for investing.

INVESTING.

It is just as essential that the investing be properly done as any other part of the procedure. I have noted that some use scales, others measures to apportion the investment and water. I am not prepared to comment on this procedure, except to say that at present I use neither. The investment should be mixed just as thickly as it can be and yet admit of the pattern being properly invested, and as it requires more time to coat a complex than it does a simple pattern, it is obvious that the investment should be mixed accordingly. Then, too, some are more dextrous than others, being capable of working with a much stiffer mix. Personal equation being such a potent factor in all our work, makes it next to impossible to formulate laws for operative procedures in the field of dentistry.

Ten to fifteen minutes after investing the pattern the investment is, or should be, sufficiently hard to admit of the sprue being removed, which should be done by heating the sprue to a full red heat for several minutes and twisting it out with pliers, thus preventing any distortion of the mould. Remember that we are dealing with the investment while in a semi-set condition, and great care is essential to success.

The flask is immediately placed over a very low flame, a flame of just sufficient heat to drive out the moisture without creating steam, and as soon as the investment is dry the flame is increased and the wax burned out. Formerly, the investment was allowed to dry over night, but I believe this to be at variance with scientific findings relative to the setting of plaster of Paris, one of the ingredients in the investment. Be this as it may, I obtain better results by placing the "green" investment over a low flame ten to fifteen minutes after flasking—the castings are just as smooth, just as sharp, and without "feathers."

CASTING.

It is obviously impossible to go into extended detail of casting without considering the numerous devices that have been placed upon the market for the purpose, and this in itself would require a paper of considerable

length. My advice, therefore, is after mastering cavity preparation and formation, to master the complete technique, and then it is time to master the device with which you expect to do the casting. I fear that a great many have fallen and that more will fall by the wayside by beginning at the reverse end. That which goes to make up the entire casting problem is by no means easy of solution, nor suited to perfunctory methods or desultory application.

At present our work in this field is largely empirical: we have not practiced casting sufficiently long to have established it on a scientific basis, consequently we are too many times between the devil and the azure brine to know the how and the why. Some day the clouds will clear, and we shall broaden our horizon and place casting on a scientific basis. Then we shall have what we have not now, a perfect casting machine, a machine which will be automatic in its action, indicating the exact pressure on the gold in the mould and at the same time the temperature of the metal, just as our pyrometer furnaces indicate the temperature of the porcelain. This together with a perfect pattern wax and a perfect investment material will have a powerful influence in eliminating stumbling-blocks in the paths of those not especially adapted or reasonably versatile.

The two most important considerations with the present machines are to determine the requisite pressure and the proper state of fluidity of the gold. Too much pressure will expand and crack the investment, causing an imperfect casting, and if the gold is not sufficiently fluid a sharp casting is not to be anticipated.

No machine of which I have any knowledge will give an exact, sustained, determinable pressure on the gold in the mould, and with the machines of the "plunger" type it is risky, if you have a regard for veracity, to hazard a guess on the pressure. Therefore, no difference what device you use, experiment until you have mastered it, and by that time you will have discovered that the more fluid the gold is at the time when force is applied, the sharper the casting will be.

One way of determining the proper state of fluidity of the gold is this: First the gold assumes a globule, then the "bull's-eye" appears, and finally we get what may be termed the sun-glow. When this stage is reached, if you are watching the gold very closely, you will notice a very slight spreading and flattening of the globule; this is the time to put on the pressure, and if it is done properly, and if 24K. gold in very generous quantity—a quantity admitting at least 5 dwt. surplus—is the metal, you may be reasonably certain of success, though on rare occasions failure will stare you in the face. But, since it is in degree by our failures that we advance, they are not always to be despised but rather viewed as stimulants to subsequent success through fathoming the cause. "If at first you don't succeed," ascertain the cause, for the effect will follow in natural sequence.—*Cosmos.*

CONDUCTIVITY OF CAST INLAYS.

S. H. Guilford, Philadelphia.

The danger of pulp irritation and often the devitalization from placing a metal filling in contact with a thin layer of dentin overlying the pulp has long been recognized and, in a measure, guarded against by interposing some less conductive substance between the two.

For this purpose different materials have been used, such as a coating of varnish, a layer of paper or asbestos with some adhesive and non-irritating medium to hold it in place, and either alone or in connection with any of the foregoing, a layer of one of the cements.

These have answered their purpose remarkably well in connection with foil fillings but only the last one has been found really available when cast inlays are used.

If the employment of an intermediary is deemed essential under a foil filling in large or deep cavities an even thicker layer of non-conductive material is necessary under an inlay to insure subsequent comfort and guard against pulp devitalization.

However dense a foil filling may be it is never so dense as an inlay. The former contains a portion of air between its particles and air is one of the best non-conductors. In the latter the molecules are more closely in contact and thermal changes are in consequence more rapidly transmitted.

In this fact lies one of the chief dangers in the employment of the cast inlay. Another fact worthy of consideration is that a gold filling may be removed piecemeal if for any cause the tooth should be sensitive to thermal changes after being filled. A cast inlay could not be thus removed and would have to be pried out with wall fracture as an almost certain result.

We therefore feel that the necessity for providing against thermal shock under cast inlays should be strongly emphasized.

It has been a common practice, in deep cavities, to partially fill them with cement and then give to this material and the adjacent walls the shape necessary for the placing and removal of the wax inlay form. This is a good practice and in many cases has to be restored to, but it takes time and delays the completion of the operation.

A better plan, in cases where caries has not made too extensive inroads, is to remove only the softer portions of decay and prepare the cavity so that the wax form will draw, at the same time shaping all margins in the most careful manner just as we wish them to remain.

After the inlay is constructed and ready to insert the inner portion of the cavity is further excavated and prepared in the usual manner. The removal of this last portion of decalcified material forms a space for the cement to occupy when the inlay is set. But this is usually not enough. The wax form after its removal from the cavity with the sprue-wire firmly imbedded in it should be reduced in size on its cavity side so as to provide greater space for the non-conducting cement.

This is an exceedingly delicate operation owing to the danger of distorting the form and rendering it useless. To trim it with a cold spatula or bistoury would necessitate the application of too much force. A heated spatula would be liable to melt too much of the wax and cause it to flow and ruin the form. Heat, however, seems to be the most available medium for the purpose if some means be provided for carrying away the wax as fast as it is melted. For this purpose a couple of devices have been placed upon the market consisting of a handle with a bulb or receptacle near its outer end and a metal or glass capillary tube leading from it. The handle is hollow and connected with an exhaust pump of some form.

When the bulb is heated the free end of the small tube is applied to the portion of the wax form to be removed and as it melts is drawn by suction through the tube into the bulb where it is absorbed by the cotton.

A device of this kind serves its purpose admirably, but it lacks simplicity. An equally efficient method, but far simpler, has been suggested by someone and adopted by the writer. It consists of an old excavator from which the point has been broken and the shank slightly roughened with a file. If cotton is wrapped in a spiral about the point for half or three-quarters of an inch and the shank heated some distance farther back, the point, when applied to the wax form, will melt it and the cotton instantly absorb it.

In this way, with deft handling and the occasional renewing of the cotton, any quantity of the wax form may be removed, and any shape given it. In fact, the wax which is usually convex on its under side, may, by this method, be made concave or partially hollow, which will not only materially lessen the amount of gold used, but also aid considerably in its retention.

The main object, however, in removing a portion of the wax form is to provide space for a greater quantity of the non-conducting cement.

The writer has also found it of advantage to groove the wax form for retention purposes instead of doing it later on the cast inlay. To do it after the gold has been cast is a delicate operation sometimes resulting in twirling the small piece out of the fingers onto the floor and occasionally wounding the fingers when a small circular saw is used.

Grooves are easily cut in the wax form, if the sprue-wire is firmly attached to it, by drawing a fine excavator along the surfaces to be undercut. A fine bead will be raised on each side of the groove but this is easily removed from the gold surface after casting.

With the rapidly extending use of the gold inlay, improved methods of removing surplus wax from the form and of grooving its sides will probably soon be evolved from the brains of the many who are concentrating their thoughts upon the further development of this most valuable method of tooth preservation and restoration.—*The Garretsonian*.

METHOD OF PRODUCING PERFECT MARGINS

C. Kabell, Chicago.

The practical value of the cast filling, its ease of manipulation to the patient, and its time-saving advantages are appealing to me as to everyone, and I employ it wherever it shows a saving of time compared with the malleted filling, but I have been forced to change my technique.

Instead of carefully trimming down all overhanging edges I leave a little surplus over all margins and after setting and allowing the cement to harden fifteen or thirty minutes, trim down the edges with gold finishing burs and repeated burnishing.

In doing this care must always be taken that the tool rotates from gold to margin. For example, if I finish an occlusal filling in a right lower molar I trim the labial margin by running the engine the regulation way, from left to right, but reverse the motor when working on the lingual margin and do not forget to lubricate burs and burnishers with vaseline.

By these means I have succeeded in closing the margins perfectly as far as can be determined by ocular and exploratory inspection.

This sealing of margins is necessary in the light of our past experience with cements of the consistency used in setting of the inlays, which is the same as has been employed for a few decades for setting crowns and bridge work.

I have removed very few crowns, etc., that did not greet me with that foul odor that cement stores up in its pores, and I have more often than not seen decay recurring under even well-mixed cement fillings.

The thinner the cement the more easily is it washed out and cracks form that invite decay.

In cases where the shrinkage and warping of the filling would be too great to overcome by burnishing, I employ a different technique.

The gingival margin has always been the weakest part of a filling, showing the greatest percentage of recurrence of decay, and it is also the vulnerable point of inlays. As it is in most cases impossible to properly burnish gold to place between the teeth, I help myself by beveling, giving the edge an angle of about 120 degrees.

The corresponding gingival margin of the inlay will show a V-shaped form, the outer edge of which I burnish inward and depend on the malleting to open it sufficiently to make it fit snugly. If, upon examination, I find any opening, I repeat, and only after being certain of a perfect fit will I cement filling into place.—*Items of Interest.*

A good many of our most mouldable waxes, used for models in casting inlays, are more or less sticky so that the instruments, used in carving, become gummed up and drag. By dipping them in vaseline frequently, all trouble of this kind is entirely obviated in any make of wax, and the result is a good, clean-cut, smooth surface.—*F. H. Skinner, Chicago.*

A SIMPLE METHOD OF CASTING PIN AND COPING FOR A PORCELAIN CROWN.

Paul J. Boyens, Weed, California.

Select a detached post crown to fit the case and fit it to the root in the usual manner. Ream the canal with a gradual taper, making the orifice a trifle larger than for the ordinary post. This increase in the size of the cast post at the point of greatest strain will more than compensate for the difference in strength between the cast material and a platinum or iridio-platinum post. Warm a small piece of inlay wax and roll it into a stick that will approximately fit the canal, leaving it a little long. Lubricate the canal, and while the wax is still slightly plastic work it gradually into the canal. Soften the projecting end with a few blasts of warm air and warm the crown and press it firmly into place. The wax squeezing out all around will indicate that an accurate impression of the root has been secured. Chill the wax thoroughly and withdraw, then with a sharp knife trim off the surplus. Invest in soft material with the crown downward, the wax post serving as a sprue through which to cast the gold. Cast in the usual manner, using 22K. solder or platinized-plate gold. Let the flask cool thoroughly before opening. Various modifications of this method can be made. A plate or a vulcanite tooth may be used, in which case it is advisable to leave the lingual side of the root a little longer.—*Dental Brief.*

CASTING GOLD ON PORCELAIN.

E. Cunningham, Perry Sound, Can.

At last I have been successful in casting against porcelain without checking. I use a flask, the dimensions of which are one and one-quarter inches in diameter and the same height. After coating wax with silex and plaster, I fill balance of flask with Brophy's imperial investment compound and after drying I place in a coal stove and leave till it is all red hot. Then it only takes a few minutes to melt gold and force home, and as there is quite a body of investment around the tooth, it has not time to cool before the gold comes in contact with it. I have made a four-tooth bridge by this method and all facings were intact.—*Dental Review.*

HOLLOW CAST INLAYS.

W. S. Payson, Castine, Me.

In making a hollow cast inlay after the wax model is on the sprue, build up the investment on the sprue side and let it harden; then, with a small drill in the engine, drill out the back of the wax to the extent of the cavity wanted in the back of the inlay, and finish the investment.

The first investment holds the wax firmly. The drill is better than a lancet for cutting the wax. Particles of wax can be brushed away with a very fine brush.

A hollow inlay is more firmly held by the cement, and less gold is used.—*Dental Cosmos.*

THE GOLD INLAY.**J. V. Conzett, Dubuque Iowa.**

I want to commend the use of the gold inlay in its place, but it should be used with discretion, and to be successful must receive the same careful painstaking attention that is given to the gold filling. If this is done in every case, if the operator strives to make every operation better than the last one, there will not be a decline in his technical ability but he will go on from victory to victory, for "To him that overcometh shall be given the crown of life." I can not close without urging the profession and particularly the younger members thereof not to abandon the use of gold foil as a filling material. The older men will not. They know the value of it. But aside from its merit as a filling material, I know of nothing that will so perfect the technical ability of the operative dentist than will the mastery of gold foil. The man that can make a good gold filling has acquired a technique that will be of the greatest assistance to him in the mastery of any other material, and other things being equal the man that has gained this technique will make a better operation with any other material than one that has not acquired it.—*Dental Review*.

AN ANTERIOR CAST BRIDGE.**E. Cunningham, Perry Sound, Can.**

Prepare roots for abutments and adjust platinum caps. Pass pins through the caps and attach with solder. Take bite and impression; make model and grind facings. Remove pins and caps from the model and enlarge pin holes so the case will draw easily. Replace abutments on model and wax all facings in position, attaching sprue so that gold will not flow direct against the porcelain. The case is now ready to be invested and cast.—*Dental Review*.

TO HOLLOW OUT WAX MODEL FOR GOLD INLAY.**S. T. Neill, Clinton, Mo.**

An appliance costing a trifle can be made in a minute or two. Remove the middle point from a hypodermic needle, hold it in Bunsen burner, and pull it out with pliers; slip a foot of rubber tubing over the large end of the needle, warm it in the flame; suck gently with the lips on the tubing, while holding the warm point against the excess wax of the model. Burn out wax in the needle point by holding in the flame, and blowing through it.—*Western Dental Journal*.

TO OVERCOME WEAKNESS OF A CAST GOLD BRIDGE**W. J. Montgomery, Chicago, Ill.**

The brittleness of a cast gold bridge, due to the gold having been melted several times may be overcome by sprinkling mercury bichloride over the molten gold immediately before casting.—*Dental Brief*.

SHAPING WAX MODEL FOR CAST GOLD INLAYS**By C. E. Abbott**

The following method is of great value in shaping the wax model: "In compound proximal cavities in bicusps and molars I adjust the medium soft wax to approximate contour and bulk; then I stretch a strip of rubber dam $\frac{1}{2}$ inch by 2 inches over it and against it, holding the ends taut with the left hand. Pressed against the cavity by the rubber dam, the wax is easily burnished to exact proximal contour, occlusal contact, and smooth surface. I then remove the rubber dam, invest and cast as usual."

SURGICAL SOAP

For washing the hands, ordinary soap may advantageously be replaced by a liquid which is more frothy, which penetrates more easily into the interstices of the skin, and made as follows: White soap, 1,000; soft soap, 1,000; poppy-seed oil, 500; water, 3,000. The white soap is scraped, mixed with the other ingredients, and the whole heated to form a paste, to which is added glycerine, 50; betanaphthol, 50; alcohol (90 per cent.), 500; oil of lemon, 50; water, sufficient to make 15,000.—M. Richaud (*Precis de Therap, et de Pharmacolog.; Rep. de Pharm.*, June 10, 1908, 265).

CASTING WAX**By T. C. Trigger, St. Thomas, Ont.**

I have been using wax in various colors, and find that a rose tint is more transparent than the green, which is a very essential point, as the marginal edges of the cavity can be easily seen and the thickness of the wax can be determined, overlapping the marginal edges. To test the transparency of wax in various colors, I made thin slices of equal thickness, and found that the rose-colored transmitted the light more than the green, and the latter had to be cut very thin before any translucency could be detected.—*Dental Practice*.

COLLODION AS A SEPARATING MEDIUM

B. L. Worthley, Trenton, Mo., recommends collodion as a separating medium for plaster impressions. A single coat, followed when dry by a little soapstone rubbed over the impression, insures a clean parting and a smooth cast.—*Dental Brief*.

CONVENIENT BROACHES**By W. M. Cooper, Frankfurt, Germany**

Instead of using a small handle, have had a great deal of success in instructing assistant to soft-solder on old instruments of different angles. Such instruments are always at hand, disinfected, and easily applied.—*Dental Review*.

STERILIZING FLUID FOR INSTRUMENTS**By J. P. Buckley**

Equal parts of formaldehyde and ten per cent. borax solution in water make a solution in which instruments are readily disinfected without tarnishing. *Western Dental Journal*.

EDITORIAL

CASTING

IT gives us great pleasure to be able to furnish our readers, this month, so many good original contributions on casting processes. Coming as they do from men so well versed in casting methods, the reader will find many helpful suggestions on this timely topic.

And we desire to thank those who have assisted us in getting up this special Casting number, by giving their time and thought to the preparation of these special articles, and to state for ourselves and our readers, that their efforts in our behalf are greatly appreciated.

While casting processes are said to have revolutionized the practice of dentistry, we cannot be too watchful of them, particularly while this practice is in its infancy.

Casting of inlays is no work for the careless or lazy dentist, if a successful operation is to be expected. It requires more attention to details than do many other operative procedures.

Casting is very exacting work. An operation may result in failure through employment of non-suitable impression wax; through faulty cavity preparation; through faulty mixing of the investment material, although it may be the best; through failure to properly burnish the gold over cavity margins; and lack of proper attention to other small but necessary details.

To obtain the most satisfactory results in cast operations, it tries the skill of an expert. Do not imagine that a hurried impression, investing and casting is all that is necessary. With your best attention to details, you will still have some failures. A careful, painstaking experience is a requisite to successful operations and anything short of this will bring but ordinary results.

The possibilities of this work are great, but many failures may be expected during the experimental stage of its development and conservatism should be the dentist's watchword.

Cast work, it would seem, is at present applied everywhere and under all conditions, but the pendulum will swing back, as it has in crown and bridge, and other operations, and dentists will find that cast work should not be indiscriminately applied. It has its place and its limitations, and these will be revealed as time goes on.

On account of making the July SUMMARY an all-casting number, it has obliged us to lay over until next month, some continued articles running in serial form.

The next installments of these, however, and many other original articles of value, will appear in the August issue.

SOCIETY ANNOUNCEMENTS

INDIANA DENTAL COLLEGE

The Thirtieth Annual Commencement exercises were held at Caleb Mills Hall, Indianapolis, at 8:00 p. m., Tuesday, May 25th, 1909. The following were graduated: J. F. Applewhite, Harley Bish, E. H. Blake, F. B. Bridges, J. D. Brown, Inlow Burton, H. G. Cain, J. R. Carnahan, H. W. Cawley, I. M. Coogle, Walter Cowan, C. W. Doyel, J. K. Duff, W. E. Garritson, S. J. Grossnickle, J. H. Hardwicke, Victor Hilgoman, F. E. Hill, O. E. Hite, R. H. Hopkins, R. M. Hubbard, Douglas Hunter, E. M. Hurst, C. T. Johns, A. R. Killian, J. H. Kraning, J. Kreutzer, R. N. Luse, W. L. McMurray, Carl Magnussen, Edward Martin, Harry Mayer, C. A. Meeks, D. W. Montgomery, C. E. Morgan, E. C. Oberdorf, R. H. Richardson, E. F. Riddell, P. J. Ritchie, G. W. Rodger, Pearl Russell, F. W. Seidel, Geo. J. Smith, H. Stephens, H. C. Tolliver, G. E. Weir, W. J. Wilson, W. W. Woodrum, E. E. Young.

RESOLUTIONS ON THE DEATH OF DR. M. B. SHUMAN

Whereas, An allwise Providence has seen fit to remove from our midst in the morning of life, and in the promising period of his professional career our esteemed fellow member, Dr. M. B. Shuman, and

Whereas, His professional zeal and devotion to our organization was shown by his presence at the opening hour of our late meeting, notwithstanding that he was already ill with the fatal disease, necessitating his withdrawal before adjournment; therefore be it

Resolved, That in the death of Dr. M. B. Shuman, the Lebanon Valley Dental Association loses a beloved member, whose brightness and geniality commended him to all, and whose absence will cast a shadow upon our future gatherings, and

Resolved, That these resolutions be spread upon the minutes of our society, and that a copy be sent to the bereaved parents and family of our departed brother, also to the dental journals for publication.

C. R. SCHOLL, D. D. S.

C. V. KRATZER, D. D. S.

GEO. S. SCHLEGEL, D. D. S., Ch. of Com.

The ninth annual meeting of the American Society of Orthodontists will be held in Cleveland, Ohio, on Monday, Tuesday and Wednesday, October 4th, 5th and 6th, 1909.

Frederick C. Kemple, Secretary,

43 No. 48th St., New York, N. Y.

The governor of Kentucky has named Dr. J. H. Baldwin of Louisville, member of the State Board of Dental Examiners for a term of five years.

The Montana Dental Society recently elected the following officers: President, George H. Chase, Great Falls; first vice president, G. A. Chevigny, Butte; second vice president, T. T. Rider, Missoula; secretary-treasurer, R. L. Spaulding, Helena; supervisor of clinics, T. M. Hampton, Helena.

The Arkansas Dental Society recently elected the following officers: President, Dr. G. E. Andrews of Harrison; first vice president, Dr. L. K. Charles of Eureka Springs; second vice president, Dr. E. R. Rushing of Morrilton; secretary, Dr. I. M. Sternberg of Fort Smith; corresponding secretary, Dr. F. C. Wilson of Russellville; treasurer, Dr. J. W. Stephens of Sheridan.

The Georgia Dental Association recently elected the following officers: President, W. C. Miller, Augusta; first vice president, George Tignor, Atlanta; second vice president, Holmes Mason, Macon; corresponding secretary, D. S. McNeal, Americus; recording secretary, Deloss Hill, Atlanta; treasurer, H. H. Jewett, Atlanta.

The Lake Erie Dental Association is now officered as follows: President, Dr. C. L. Mead, Union City; vice president, Dr. Ross Porter, Oil City; secretary, Dr. V. H. McAlpin, Warren, Pa.; treasurer, Dr. D. C. Dunn, Meadville.

The following officers have been elected by the Iowa Dental Society: President, F. M. Hunt, Des Moines; vice president, T. P. Cooke, Burlington; secretary, W. G. Crandall, Spencer; treasurer, Frank Ford, Fairfield.

The Illinois Dental Society has elected the following officers: President, E. H. Allen, Freeport; vice president, C. C. Corbitt, Edwardsville; secretary, J. F. Walsh, Decatur.

The Tennessee Dental Society has elected the following officers: President, C. H. Taylor; first vice president, Harry Holder, Gallatin; second vice president, C. A. Tavel; treasurer, F. W. Meacham, Chattanooga; secretary, W. I. Dupree, Brownsville.

The Missouri Dental Society has elected the following officers: R. E. Darby, Springfield, president; O. J. Fruth, St. Louis, first vice president; C. C. Allen, Kansas City, second vice president; J. F. Wallace, Canton, recording secretary; J. D. Patterson, Kansas City, corresponding secretary, and J. T. Fry of Moberly, treasurer.

The New Hampshire Dental Society is now officered as follows: President, Dr. H. B. Baldwin of Manchester; vice president, Dr. A. C. Foster of Rochester; secretary, Dr. F. F. Fisher of Manchester; treasurer, Dr. W. A. Young of Concord; executive committee, Dr. A. F. Barrett of Keene, chairman; Dr. G. E. Rowell of Concord and Dr. E. H. Albee of Concord.

The Mississippi Dental Society recently elected the following officers: President, Dr. J. F. Brunson, Meridian; first vice president, Dr. G. Steuart Handy, Natchez; second vice president, Dr. Rush P. Abbott, West Point; secretary, Dr. L. B. Price, Corinth; treasurer, C. C. Crowder, Kosciusko.

The officers elected by the Kansas Dental Society are: President, E. Bumgrader of Lawrence; first vice president, Dr. S. J. Renx of Leavenworth; second vice president, Dr. S. S. Noble of Wichita; secretary, Dr. H. W. Fessenden of Ottawa; treasurer, Dr. E. H. Bellew of Dodge City.

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To Correspondents: Send communications, exchanges, books for review, etc., intended for the Editor of Dental Summary, to Dr. L. P. Bethel, 1255 Nell Ave., Columbus, Ohio. Subscriptions and advertisements, send to the publishers.

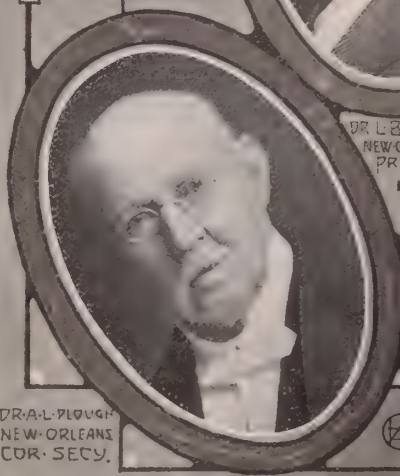
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THE DENTAL SUMMARY

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PORCELAIN AND GOLD INLAYS

By A. W. Starbuck, D. D. S., Denver, Colorado

Superintendent Infirmary, Colorado College of Dental Surgery

(Concluded from page 521, July Summary)

INVESTMENTS AND INVESTING.

This particular phase of inlay work does not receive the attention it should. In the first place the wax pattern should be so carefully made and polished over the surface that it is without a flaw, then secondly it should be invested with an investing material that will conform to the pattern and produce a casting as perfect as the original pattern. Our neglect lies in using a too coarse investment and the careless manner of applying it.

It is preferable to use a fine investment first, one which is easily painted over the surface of the pattern and later invest in the cup with a coarser, more substantial material. An excellent preparation for first coating the pattern is equal parts powdered rouge and plaster, while there seems to be nothing better than equal parts of extra fine powdered silex and plaster for the outer investment. If these investments are prepared by the dentist, he should be careful about thoroughly mixing the ingredients, otherwise the investment will crack and shrink. It should be passed through a fine sieve at least five times.

After removing the wax pattern from the cavity and attaching the sprue wire, examine very carefully, and if there is any collection of saliva or blood, the pattern should be thoroughly cleaned, first, in a stream of water from a water syringe, then wiped carefully with a brush or pledget of cotton moistened in alcohol. Attach the sprue wire to crucible former and we are ready to invest.

Mix a small teaspoonful of the red investment with water until it is the consistency of thick cream, then with a small camel's hair brush paint the surface of the pattern carefully, making the first application very thin and be particular about working it into every minute angle. Gradually build up with this investment until there is a thickness of at least $\frac{1}{8}$ inch over the entire pattern. This investment should extend down over the sprue wire and crucible former, otherwise there might be a slight crack between the fine and the coarse investments which would fill with gold and possibly destroy the value of the inlay.

After the fine investment has set, nearly fill the cup, if you are using that style of receptacle, with the coarser investment and invest the pattern and sprue and with gentle jarring settle to place. If a ring is being used set it over the inlay and fill with the investment being careful to work into every minute crevice and irregularity of the first investment.

After the investment has set, the ring should be placed over a slow fire to dry. It is preferable to have the investment heat slowly as there is less danger of a change. The heat should be gradually increased until the investment is a dull red to the center, then it is ready for casting.

PREPARATION OF GOLD.

It is very important to have our gold for casting, free from all foreign matter before placing it in the crucible to be cast. If we have been particular with the treatment of the wax pattern previous to this time and it is a perfect counterpart of our cavity, very little burnishing of the margins is necessary. Consequently it is possible to use our scrap plate rather than pure gold. If we have been reasonably careful with our scrap, kept it free from platinum or silver, the color is not bad for fillings and it has the advantage of retaining its shape better than pure gold.

If scrap is used it should first be boiled in 50 per cent. Nitric Acid to remove any base metals that may be present, wash and place upon a charcoal block and melt. While the mass is in a molten condition it should be sprinkled with Ammonium Chloride (*Sal Ammoniac*). This should be repeated until the gold ripples like water. This may be remelted in a carbon crucible and cast into ingots for use or used as it is.

If we are melting our gold in a crucible formed in the investment very little flux, if any, should be used, as there is danger of its closing the opening into the mould thus preventing a perfect cast if the gold goes down at all.

The importance of having our gold in perfect condition for casting must not be overlooked.

It is hardly necessary to mention machines for casting, as there are so many and all will get results if properly handled. Some require a little more care than others, but good inlays may be had in any, from a tin can lined with wet asbestos, to the most complicated machines. I think, however, the centrifugal principle among inexperienced college students, will give the most uniform results.

After the inlay is cast it should be washed thoroughly to remove all investment attached, then placed in Hydrofluoric Acid which will remove any fused silex. The sprue should then be carefully cut off and the cavity surface examined minutely for any small bubbles of gold that may be attached. If the red investment was painted on very thin at first there will be little trouble in this respect.

If there is any difficulty in getting the inlay seated in the cavity, an excellent method is to heat the inlay slightly and apply a very slight layer of mercury to the surface, this will unite with the gold and upon evaporating away with increased heat the gold will be left with a frosted surface. If the inlay is now placed in the cavity any point that may rub against the walls will become burnished and can be cut away. When the inlay goes to place perfectly, the surface should again be etched, for the better adhesion of the cement.

All inaccessible surfaces of the inlay should be trimmed and polished before setting. However, if it is possible to reach the margin with a burnisher, it should be left slightly flush to permit a thorough burnishing before the cement sets, after which the margins should be finished and polished the same as for a gold filling.

SOME PRINCIPLES OF RETENTION IN ORTHODONTIA

By Martin Dewey, M. D., D. D. S., Kansas City, Mo.

(Continued from page 433, June Summary)

IN MY last article I named the forces of retention as they appeared to me. I also stated that the most important of the two classes, natural and mechanical, was the natural forces; although we were compelled to utilize the mechanical until the natural could be established. As the natural forces are the ones upon which our final success depends, I will describe them first, as fully as I can. At first glance you may not fully appreciate them, but after you have devoted more time to them and have asked yourself the question of "Why?" and given it careful thought, you will begin to see that there is more to them than you possibly thought at first.

Taking the forces more in the order of which I gave them than in their order of importance, for it is hard to say which is the most important, I will begin with the one with which you are all familiar, viz., the "normal relation of the incline plane." So much has been written on this subject as a force of occlusion that I will not devote much time to it. However I

will again caution all that the lingual cusps are as important as the buccal (cuts Figs. 1 and 2, reproductions of cuts 2 and 3, Angle Seventh edition); also that you become familiar with the various shapes of the teeth, especially



Fig. 1.

the lower premolars; also the position which they occupy in the arch. I find the varying character shapes are something which even the orthodontists as a whole are not familiar with. If a body of them was asked to describe the shapes and give the occlusion of a three cusped lower premolar, a good



Fig. 2.

many would be found wanting. These teeth are not as rare as might be supposed and as each cusp has an occlusion, it must be taken into consideration when regulating the case and retaining it. Fig. 3 is made from Figs.

48, 49, 50, Black's Dental Anatomy, and the accuracy of them is confirmed by cases taken from my own collection. Another thing which must be taken into consideration is that the lower premolars do not occupy the same angle that the upper ones do. Figs. 4, 5, 6. If a line were drawn through the buccal and lingual cusps of the upper premolars it would not be paral-



Fig. 3.

lel to one passing through the lower premolars. The lines would cross with the apex of the angle to the lingual of the teeth. I think in a great many cases the lingual cusp of the lower first premolar, especially, has been moved too far mesially in the attempt to get it parallel with the upper. This in turn has invited the distal surface of the lower canine to turn buccally. The things I have mentioned are things which we must watch for the influence of the incline plane in holding the teeth is well understood. We



Fig. 4.—Mandible from skull from my collection. Occlusion normal except abnormal frenum above and below, which did not disturb premolars. Observe position of lower first premolars and relation the lingual cusp bears to buccal cusp.

can even say at the beginning of the case whether we will have any great trouble in getting the natural forces of occlusion to assert themselves by observing the length of the cusps. Also in speaking of the length of the cusps in relation to the force of the incline plane, as a factor in retention, I would not have you forget the importance of the length of the cusps. In order that we may not have undue trouble in getting the teeth to remain where we wish them; in order that the force of the incline plane be exer-

cised to its fullest capacity, we must be sure that the length of the overbite be no greater than the length of the buccal cusps of the molars and premolars. In other words, when the anterior teeth are edge to edge the tips of the buccal cusps should just touch. By studying the majority of models,



Fig. 5.—Mandible from my collection. Skull presented by Dr. L. J. Kereji. Malocclusion slight. Observe position of lower premolar same as in Fig. 4.

when the cases are retained we will find that we do not always have that condition and in these cases where we do find it, experience will prove that they are the ones in which we have our best results; they are the ones from

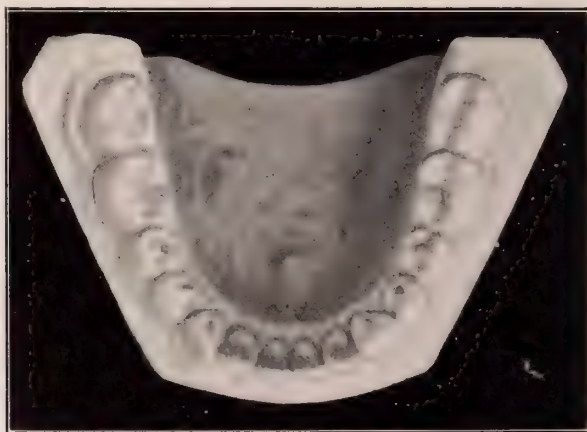


Fig. 6.—Model made from mouth in which teeth are near normal occlusion. Never was regulated. Position of premolar similar to Figs. 4 and 5.

which we have been able to remove the retaining appliance early. If the length of the over-bite is not the same as the length of the buccal cusps of the molars and premolars, we must so adjust the retaining appliance that the teeth will be induced to assume the normal position. The fact that this setting of the teeth is to be desired, partly explains what I had in mind when I said "retention was the application of force to maintain and pro-

duce normal occlusion." The force of the incline plant in reference to the over-bite and as a factor in retention will be again taken up in conjunction with the interproximal contact point. I will show how in some cases one is more important than the other, but in man both must be taken into consideration.

HARMONY IN THE SIZE OF THE ARCHES.

In speaking of the harmony of the size of the arches in retention, very little need be said, as all who are familiar with normal occlusion fully understand the importance of this force of retention, which is also a force of occlusion. However, I will call your attention to several cases in which this one factor has been neglected. It is true, you can not disturb the harmony



Fig. 7.

in the size of the arches without throwing out some other force to a certain extent. The cases which I will show you are those in which the establishment of the normal occlusion was impossible because the "harmony in the size of the arches" had been destroyed. The importance of keeping the proper mesio-distal relation of the teeth in all cases, in order that we may have the proper size of each arch is well understood in the deciduous teeth as well as the permanent teeth. The evils of extraction are so apparent that it is unnecessary to mention them, aside from destroying the facial contour and expression of the patient, extraction renders the establishment of normal occlusion impossible, because it forever destroys the possibility of again having harmony in the size of the arches. There being no teeth in both arches which are exactly the same size, no teeth could be extracted and the arches remain the same size. Therefore, when in a "fit of wisdom" some one takes out different teeth in opposite arches, normal occlusion becomes a thing impossible for that patient without artificial substitutes. The case shown in Figs. 9 and 10 is one of that kind and because I could not promise

the fond mother normal occlusion without artificial substitutes, I lost the case and a \$5,000 fee, maybe (?). But, who dares say it would not have been worth ten times that amount to establish normal occlusion and harmony in the size of the arches when a premolar was missing from one arch and a lateral incisor from the other! Fig. 11 shows a case with a lower second molar retained too long. The X-ray shows the premolar is absent. You see the normal relation of the teeth in the models, but the molars did not remain as shown. Because of the lower molar being held distally at the



Fig. 8.—Skull of Moundbuilder, showing great wear of all teeth, still cusp and over-bite same length. Skull tipped back slightly to better show wear on front teeth.

time of the eruption of upper second molar the first molar was carried forward as it should have been and now the lower is distal to normal, not because we did not have the proper locking of the molar cusps, but because of the inharmony in the size of the arches. In the latter case, regardless of how long mechanical retention would be employed, normal occlusion of all of the teeth could not be maintained when the retainer was removed, because of the missing natural force of retention. This brings us to the important fact that all fillings and artificial substitutes should have the proper mesio-distal diameter as well as the proper inclined plane and normal interproximal contact. In fact if one force is missing, some of the others will soon be thrown out of balance.

NORMAL MUSCULAR PRESSURE.

The importance of normal muscular pressure is well shown in all cases in which the patient is a mouth breather. Of course some of the de-

formity which we see in those cases is the result of abnormal atmospheric pressure. Nevertheless we must have the harmonious action of the lips and tongue in order that normal occlusion may be maintained. The great amount of deformity which we find in cleft palates is the result of the muscular pressure which has no constraining influence. Likewise, in abnormal frenums, we see the effect of abnormal muscular pressure caused by the abnormal attachment of the frenum. We also find cases of large tongues which produce malocclusions. These cases must be treated with a view of



Fig. 9.—Right upper canine and lower lateral extracted, causing inharmonicity in size of arches.

getting the teeth in such a position that when they are retained the muscular pressure will be normal. Cases, which are the result of tongue and lip habits, are very difficult to retain because the habit destroys the normal muscular pressure.

The importance of the action of the various muscles as a factor in producing and maintaining the proper relation of the teeth has long been a recognized fact. It has also been one that is very improperly understood, just what muscles play the part and how they act. In a review of what has been written on this subject, we find a great many misstatements. It should be remembered that we have but four pairs of muscles of mastication. They are all attached in the region of the ramus; that is that are inserted into some portion of the ramus or angle; none of them being inserted forward into the body of the bone. Therefore, all the force which they exert on the body of the mandible must be transmitted through the teeth during mastication. If we find malocclusion, we will not find the proper development of the body of the mandible because of the improper stimulation as a result of the improper muscular force.

The muscles of expression play an important part in maintaining occlusion and their action is almost entirely confined to the eight anterior teeth. This is easily understood when we consider that all of the muscles of expression except the levator menti, are inserted into the orbicularis oris; therefore, the result of their action would be apparent at the point of insertion or in the region of the anterior teeth. All of the muscles of expression acting normally will maintain normal occlusion, while any of them acting abnormally will produce malocclusion. When you consider that it is necessary to have the sum total of the muscles of expression, elevators and depressors of the mandible, in order to maintain normal occlusion and that



Fig. 10.—Side view of Fig. 9, showing upper premolar missing.

any group or any muscle acting abnormally will produce malocclusion, you readily see what a large part muscular action plays in retention.

NORMAL INTERPROXIMAL CONTACT.

When I first spoke to some of my friends in regard to the importance of having a normal interproximal contact, in order that the teeth might be retained, I was told that the incline plane was the important factor; that is if I had a normal occlusion with the proper locking of the inclined planes, the contact point would be normal, which is true in some cases, but not in all. It is possible to have the proper inclines of teeth occluding and yet have a slight rotation. It has been thought that in such cases the occlusion would produce the desired result. In some cases it did, but not in all.

The force of the interproximal contact differs from the force of the incline plane in several respects. First, the incline plane of one tooth acts on the occluding incline of the tooth in the opposite arch, while the interproximal contact acts on the adjoining tooth in the same arch; also, the incline plane is an active force while the interproximal contact is a passive

force; that is, we see the result of it or lack of it through other forces. As an example, we may consider the blocks of stone in a masonic arch. As long as they are in their proper place the passive force which they will exert to hold up the structure above them, is great. If one of them be removed or displaced the entire arch will collapse because of the absence of the force exerted by interproximal contact. A simpler example would be the staves of a barrel. Here the pressure of the staves is balanced by the force of the hoops. Both are passive, yet if one stave be removed or broken the entire barrel falls to pieces. The hoops and staves of a barrel occupy very much the same relation to each other that the interproximal contact of the teeth and the muscular pressure bear to normal occlusion.

The example which I have sighted, in trying to show you what I mean

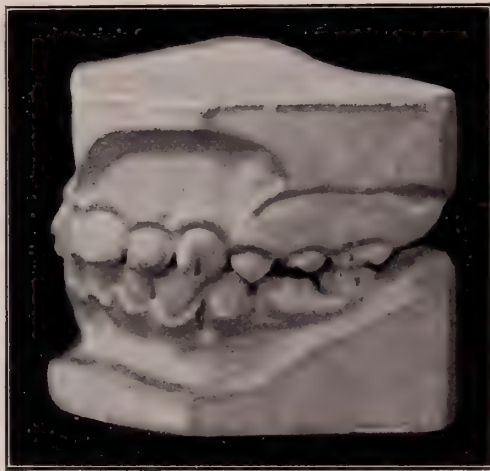


Fig. 11.—Case from Dr. S. E. Dodson's practice. The molars in good occlusion here did not so remain because of inharmony produced by great width of second deciduous molar.

in regard to the passive force of the interproximal contact of the teeth, may be further shown with billiard balls or any spheres of the same size. As the interproximal contact of teeth is but a point, the example of the spheres may be the better. If you take three spheres and have them touching each other, lying in a straight line, you will be able to apply great pressure from the opposite sides of them providing this pressure is also in a straight line. The spheres will occupy the same relative position and will not move. However, if you deflect the line of the application of your force, but slightly, one or all of the spheres will be moved from position. Likewise, if the teeth are so arranged in the dental arch, that the interproximal contact points are normal, each tooth will remain in its proper position and the arch be maintained. All of the active forces which are brought to bear on the teeth and arches will be resisted by the passive force of the interproximal contact. By the failure to observe the proper relation of the

interproximal contact points of the various teeth, many cases have resulted in failure, when all other things were as near normal as was possible for them to be, under the circumstances. A position which needs watching is that of the canines, especially the lowers, for if they are not placed so the interproximal contact is correct, we will soon find them slipping out of place and the entire arch collapsing as a result of which the normal occlusion will soon be destroyed. As it may be imagined, those teeth which are not well supported by the inclined plane require a greater amount of watching than do the premolar or molar series. This brings us to the fact that there is a definite relation existing between the incline planes and the width of the interproximal contact. We speak of the interproximal contact point, but in some animals it is more than a point, it is a surface and even in man it is often a surface. I will speak about the relation of the interproximal contact to the length of the cusp when I consider all of the forces of retention as they work together.

(To be continued.)

THE COLOR PROBLEM IN PORCELAIN*

By H. H. Tashjian, Kalamazoo, Mich.

FIVE years ago the dental profession acclaimed unanimously that porcelain was the ideal filling material, par excellence. At that time all of us were pausing as specialists and artists in the ceramic arts. The society meetings, clinics and the magazines were full of it. We all had our definite and positive ideas as to cavity preparation, shading of colors and baking. Today, as if by magic, the whole profession is turning a deaf ear. They have lost their high sounding artistic terms and the power of discrimination between the esthetic and otherwise. What brought this change? Three factors, to my mind, are responsible for this: 1st, the absolutely unscientific work of the porcelain egotist has bred a spirit of distrust among the community toward this material so that to suggest a porcelain filling to a patient under any circumstance, is almost an insult. They tell you point blank that their work was done by Dr. So-and-So, porcelain specialist, and see what is the outcome. You cannot do anything of that sort to them. And thus the porcelain has to be relegated to the back shelf, the furnace has to go to rust and in its place brought to prominence a second factor, viz., the introduction of artificial enamels. As soon as these came on the market the inefficient and dishonest specialists used this material and called them porcelain. Fortunately the first output of these materials was of such character that the fillings worked like boomerangs. They became discolored or disintegrated, and behold! another set of specialists were exposed. Driven to desperation these men suddenly heard of the cast gold fillings by the Taggart process and today we have these specialists

*Read before the Southwestern Michigan Dental Association, April, 1909.

of cast gold fillings who are penitently telling their friends that they were mistaken in porcelain. And yet there are some heroic figures standing boldly and still talking porcelain. Men like Land and Byram and Peck. They were first in war, first in peace and first still in the hearts of artistic professional men. To us, the lesser lights, there is nothing to do but follow these and incidentally study some. With this thing in view I have come before you to give you a new line of thought for study.

I am going to pass around for observation a broken Richmond crown with the piece cemented back on it, as you see if you hold the tooth horizontally and present the big portion of the tooth to the light, as in Fig. A., the light comes as far as the cement and is deflected and the small part not receiving light, is dark. If you turn the tooth about so that both parts face the source of light, as in Fig. B., both parts receive same amount of light and they seem harmonious. This is the source of suggestion to my succeeding argument.

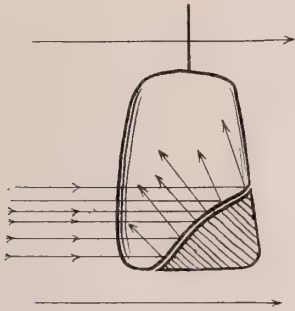


Fig. A.

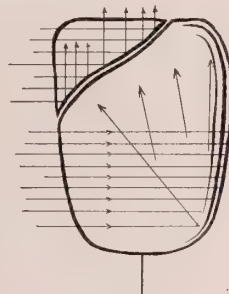


Fig. B.

COLOR PROBLEM.

This question of color in porcelain-inlay work has been very perplexing to a majority of workers, each individual following certain empirical rules without going into the philosophy of the matter. Thus the beginner in inlay work finds himself in an unexplored field. I propose to bring together some of the old data, and if possible, give some explanation for their existence and from these draw some general conclusions. It is hoped that these few explanations will be helpful, especially to the beginner, to overcome the difficulties which he is sure to meet at the start.

The color problem will continue to be a problem, a guess-work, as long as the following two essential conditions are not met with, viz., (a) Angle of incidence of light in the tooth; (b) Shadow areas in the porcelain inlay.

(a) It has been my fortune after repeated trials of all the methods expounded by various specialists to find some cavities in the mouth where a perfect matching of colors, although possible, could not be accomplished, because the ordinary forms of cavity preparation were not carried on with a view of letting frontal rays of light strike the inlay at such angles as to allow them to penetrate it. Reference is made to the distal cavities in the

cuspid and bicuspid. At certain angles of vision these inlays prepared with ordinary methods may seem perfect in color, but when observed frontally they invariably look darker than the tooth, indeed, some of them appear black. No matter how much white you may incorporate into the body, or you may bake your inlays in layers or mass, the same trouble will appear. You may use cavity lining opaque bodies, or, so to speak, light your inlays with white, or use various shades of cement to alter the color of the tooth or the reflected light through the inlay, it will be the same sad outcome, the inlay will look dark! This same difficulty comes to us conversely in the case of mesial cavities of incisors, especially when the surface of the tooth is at an abnormally torso-frontal angle. In such cases the inlay looks white or opaque, the color of the cement determining the shade. This same difficulty makes itself evident in proximal cavities where the inlay does not come clear to the incisal edge; at certain angles the inlay is not in the right shade, it is generally darker, something is disturbing it!



Fig. 1.



Fig. 2.

To overcome these various difficulties I venture to give as a remedy correct cavity preparation, with a view of bringing the visual line from at least three distinct points. These points must extend beyond the mere margin or surface of the inlay.

To illustrate my theory as to the cavity preparation, I present a horizontal cross-section of a dental arch, and as a typical case take a distal cavity in the cuspid. See Figs. 1 and 2. From the diagram in Fig. 1 it is noticed that there are only two possible cavities in the arch that get perpendicular rays, or penetrating rays, and in these cavities there is only one spot on the surface where the light strikes without glancing. For it is not only the horizontal plane that we must consider, but also the perpendicular: teeth not being absolutely perpendicular, any line outside the horizontal plane is at a different angle from that of the plane. Both of

these angles are more pronounced as we go distally from the mesial line. Hence the enormous difficulties, trials, and disappointments, and sometimes the happy surprises of the inlay worker. How often an inlay that you know was not a good match, and every time you saw your patient your eyes longingly searched to see if it was noticeable, you were surprised to fail to detect it? The shadow of the lip wrought that result, or the position of the patient towards the source of light changed the view. The reverse of this is just as often true.

It is for these reasons that I advocate a radical change in our schemes for color transfusions. Most people can see the shades of color quite accurately yet they fail to produce well matched inlays, because their cavity margin comes at a very acute angle to ordinary lines of vision. Thus a distal cuspid cavity may be well prepared for retention, and a dozen matrices made, and as many trials at baking with various bodies done and yet the result be an utter failure so far as color goes. What is the difficulty? The light glances over, does not penetrate the surfaces of two *differently refractive bodies*,—tooth body and porcelain have different indices of refraction,—and between these two bodies there is a curtain of opaque cement which aggravates the trouble.

Looking over the diagram in Fig. 2 we note that at ordinary angles of observation we barely see the distal portion of cuspids from the front. We see it more because the homogeneous body of the tooth allows the light to go through unimpeded and thus it lights up the distal portion. It is to produce this very result that I advocate the extension of the cavity towards the mesial. In order to test and see if your cavity is prepared right as to this rule, restore the part with white gutta percha, and observe, if the gutta percha in the tooth looks darker than the original gutta percha; if so, you need more mesial extension. By extension we bring the inlay beyond the glancing rays of light and give an opportunity for the light to penetrate and pass through and light up the inlay. Figs. 7 and 8 illustrate the correct form of cavity preparation for such places.

(b) There are cavities where the direct line of vision is a source of trouble by the fact that the rays that penetrate the inlay come back neither in the original angle nor in the same intensity. They are either deflected, just as they are in convex mirrors, or are absorbed in a large measure by the opaque cement.

When too much of this absorption occurs the inlay looks black, or when deflected very widely these deflected rays coming from the bottom show the cement color more prominently. Both of these faults need a similar treatment. The labial inlays have the deflective disturbance more common to them. The proximal inlays where they do not reach to the incisal edge have the absorptive disturbance. This latter of absorptive origin may be proved by holding a mirror distally to the inlay, throwing the light into it. As soon as it is lighted the inlay regains its normal color.

The first case, the defective disturbance, is remedied by placing a ring of white foundation body, Brewster's shade 15, baking it to semi-biscuit. The ring follows the outline of the inlay, it is in the center of the body not touching margins. It is made more prominent when the inlay is distally located. This gives a limited opacity at an area where shadows are liable to form, at the same time the white gives sufficient light to the rest of the body to bring out the translucent parts more clearly. The opacity at these points also helps out in preventing the cement of the margins from shining through it. When the margins get seasoned by virtue of partial dissolution of the cement the rays of light will pass unbroken. That is, the rays will go through the two bodies with very little refractive disturbance, hence there will be no trace of patch-work in evidence. For illustration of the white ring in a labial cavity see Figs. 4, 5 and 6.

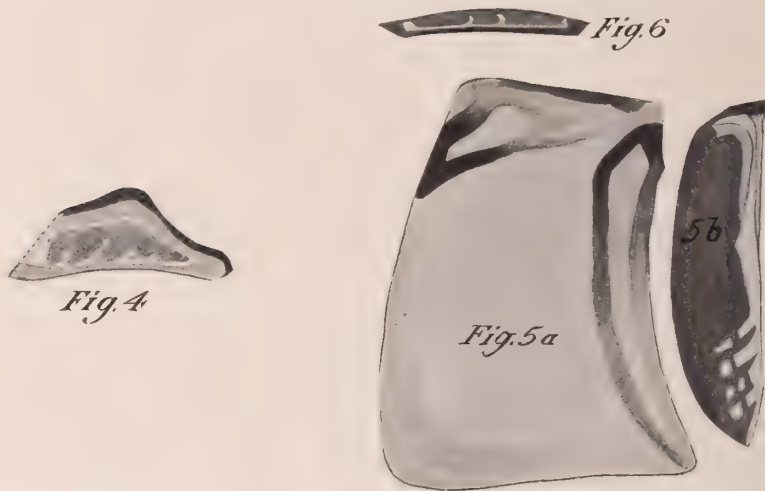


Fig. 4.

Figs. 5a, 5b and 6.

The second form of disturbance, the absorptive, is remedied by lighting the inlay distally, using the same body, Brewster's shade, 15. A white pyramid is built at the extreme distal line, the apex projecting to the labial surface the base resting on the ground work of the inlay. The incisal end of the inlay sometimes needs this treatment, especially when it is in a distal cavity. The cause and effect attained are the same as described in the previous case. For illustration of this method of lighting see Figs. 7 and 8.

I have not touched upon the selection of colors, because I think anybody who can say that an inlay does not match can also compare the shade guide with the tooth. The color selection is of secondary importance to the avoidance of color disturbing causes. However, it will not be out of the domain of this paper if a few suggestions are made on that phase of the question. Taking as our standard shade guide Brewster's shades, we are now ready to note colors. The cavity must be packed with dry cotton, this giving us an idea how the tooth will appear when the cement is on.

The patient's head is placed in a position for natural observation. The colors should be noted from only one angle, the front-visual angle. The general color scheme is thus secured. The minor detailed peculiarities are observed closely and marked on the matrix.

From hundreds of observations it has been quite definitely established that the prevailing colors are found in Nos. 1 and 2, in our shade guide. There is a little No. 5 and some No. 8. This latter is especially prevalent in cuspids. The shade No. 8 is a very important color, it gives a life-like appearance to the work. I may almost safely say that it is a trump,—when in doubt play trumps. Very often the foundation bodies, Nos. 13 and 15, with a little No. 8 of the enamels are sufficient to give a respectable matching. Invariably a slight covering with No. 1 and XX on top of it make the inlay exceedingly smooth and translucent.

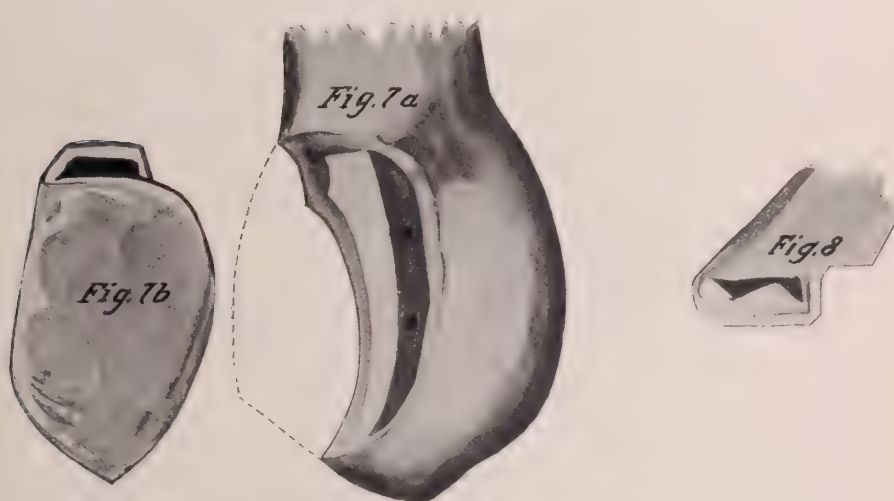


Fig. 7

Fig. 8.

The question of bodies is another problem which I want to make a few remarks upon.

We have heard so much about various kinds of bodies, high fusing, low fusing, etc., that the high fusing is better than the low fusing because authorities claimed that the high fusing is more translucent. Just what they mean by translucency I doubt if they know themselves. My opinion is that, based on only the color and translucency the claim is wrong, because we know for sure any body is either *transparent* or *opaque* in the degree that light can travel through it. In the case of porcelain, whether high or low, the temperature and the time given in its baking is all we need to consider in our efforts to get just the degree of translucency. I can attain any degree of translucency with any kind of body you give me. It requires a training of your intuition and accustoming yourself to your apparatus and current.

After we have mastered ourselves with the two fundamental principles

of overcoming visual and light defects in our work we have to train our eyes in knowing just the degree of translucency we must give to our porcelain so the alteration due to the cement curtain will produce a harmonious effect in the tooth. If the cavity is properly prepared and shadow areas taken care of in the manner above described, the task of the baking will not be such an arduous one and any small differences will not produce the horrible results which we see so often produced by the best of operators.

Let me finally urge upon you the following two principles:

(a) Cavities must be prepared in such a way as to avoid the tangential glancing of visual rays.

(b) The cavities should be lighted sometimes where the rays are apt to take a distal angle after reflection from the bottom. Or reduced in translucency at particular areas where they are apt to transmit marginal rays towards the center.

DISCUSSION.

Dr. J. M. Thompson: I never like to make excuses for deficiencies, but this is the first time I have had the pleasure of hearing or seeing the paper. I have enjoyed it thoroughly, and some points in it are very well taken.

What I am going to say I do not want any one to regard as a personal affront. The wisest man that we have a record of wrote, in summing up things at the close of a somewhat varied career, that he noticed the wise died just the same as those who did not know so much, and that those who did not know so much died just the same as the wise. There is not one of you who, in looking over the results of your inlay work, will find that all of your results have been good, and if you were to be put to the test you could not give any definite or distinct reason why you succeeded in one particular case and had failure in another.

I have heard Dr. Byram lecture lucidly and beautifully upon colors and their combinations. I have also seen some of Dr. Byram's work, and I know that he has failures just the same as the rest of us. And I will say that the essayist must have put in a great deal of time and study upon the work that he has brought to us today. But the fact still remains that there is somewhat of a personal equation in inlay work; while we may assemble in a sort of general way the ideas that we pick up from time to time, at the same time it depends upon our own intuition to a greater or less extent whether every result be good or bad.

I am not prepared to discuss, from a scientific point, the angles that the doctor mentions, the angles of light, and so on, and give you anything further than he has given you, but in the use of his white foundation bodies his schemes are novel and interesting. I am quite interested in the design he makes in the labial inlay, and also in the other, and when I get home, when I have occasion to try it, I will see what it amounts to.

The question of white foundation was first brought to my notice by Mr. Brewster, of whom the essayist spoke in his paper, and, not being thoroughly satisfied with the results obtained with his material, I was one of the first to ask for a plain white body from the Consolidated Company. With that I have obtained better results than I was able to before receiving it, and it has been my plan to incorporate it in all inlays involving angles. If this can be used as an illustration (referring to model at hand) I would take the white out about here and restore the corners with it as much as I deemed necessary, of course leaving room enough for the overlying enamel color to overcome the white showing through it. Now that comes after a bit of practice.

Just another point: Sometimes you will find teeth with little white spots running

all through them. Now, if we put in a corner of a perfectly plain color which would match the tooth, otherwise, the absence of those white spots in the inlay would cause a very plainly defined line of union between the two. Now, by bringing the white foundation up to a point that will be on the level with the convexity of the surface of the tooth, so arranged as to harmonize with white spots so that they may be then covered over with enamel, we have then produced a much more beautiful effect than we would to have made a perfectly plain piece of porcelain.

The wise man also said, "All is vanity and vexation of spirit." When we have made our inlay and cemented it into place and we get an entirely different result from what we intended, we feel that it is almost a labor of love and hope for better results next time.

Dr. O. E. Lanphear: The discussion that Dr. Thompson has given this porcelain problem covers the work much better than I could hope to. I am putting in a few porcelain inlays and they occupy some of my time, but I have been swung off to the gold inlays, the same as Dr. Thompson. I still believe in porcelain inlays for aesthetic reasons and practice their use. I have been taught to build up my porcelain inlays with bodies the same as the essayist tells us to do. I admit that I do not understand the color proposition.

I had the pleasure, one week ago today, of watching Dr. Bake of Chicago, build a porcelain inlay. He laid great stress on the effect of shadows, while at his work. Those wishing to see the results can see the inlay in my central incisor. The results show how well Dr. Bake overcame the troubles caused by reflection and refraction.

DIAGNOSIS AND TREATMENT OF NON-SURGICAL DISEASES OF THE MOUTH*

By **I. W. Brown, D. D. S., Cleveland, Ohio**

STOMATITIS-INFLAMMATION OF THE ORAL MUCOUS MEMBRANE.

ACUTE Stomatitis—simple or the commonest form of inflammation of the mouth is caused by the action of irritants of different kinds. It occurs at all ages, and more frequently in children, it is associated with dentition and may be limited to the gums, lips and tongue. In appearance a blush rose rash, a redness of the gums, it may be made to disappear temporarily by pressure.

"There is at first superficial redness and dryness of the mucous membrane, followed by increased secretion and swelling of the tongue, which is furred and indented by the teeth. There is rarely any constitutional disturbance, but in children there may be a slight elevation of temperature. The condition is sufficient to cause considerable discomfort. Sometimes amounting to actual distress and pain, particularly in mastication. In infants the mouth should be carefully sponged after each feeding, a mouth-wash of borax or the glycerine of borax may be used, and in severe cases which tend to become chronic, a diluted solution of nitrate of silver (three or four grains to the ounce) may be applied."

APHTHOUS STOMATITIS.

"Aphthous Stomatitis is known as Follicular or vesicular stomatitis.

*Read before the Ohio State Dental Society, December, 1908.

It is characterized by the presence of small slightly raised spots from two to four millimeters in diameter, surrounded by reddened areolae. The spots appear first in vesicles, which rupture leaving small ulcers with grayish basis and bright red margins. They are seen most frequently on the inner surfaces of the lips, edges of the tongue and the cheeks, they are seldom present on the mucous membrane of the pharynx. This form is met with most often in children under three years. It may occur either as an independent affection or in association with any of the febrile diseases of childhood, or with an attack of indigestion. The crop of vesicles comes out with great rapidity and the ulcers may be fully formed within twenty-four hours. The child complains of soreness of the mouth, and takes food with reluctance. The buccal secretions are increased, and the breath is heavy but not foul. The constitutional symptoms are those of the disease with which the apathia are associated. The disease must not be confounded with thrush. No special parasite has been found in connection with it. Each ulcer should be touched with nitrate of silver, and the mouth thoroughly cleansed after taking food. A wash of chlorate of potash or borax of glycerine may be used."

ULCERATIVE STOMATITIS.

Ulcerative Stomatitis—This form, which is also known by the names of fetid stomatitis or putrid sore mouth, occurs particularly in children after the first dentition. It may prevail as a wide-spread epidemic, in institutions where the sanitary conditions are defective. It has been met with in jails and camps. Insufficient and unwholesome food, improper ventilation and prolonged damp weather seem to be a special predisposing cause."

Uncleanliness of the mouth, badly decayed teeth, and tartar are some of the causes. It has the appearance of a specific disease, but the bacillus has not been isolated. "The morbid process begins at the margins of the gums which become swollen and red, and bleed readily. Ulcers form the basis of which are covered a grayish-white firmly adherent membrane. In severe cases the teeth may become loosened and necrosis of the alveolar process may occur. The ulcers extend along the gum line of the upper and lower jaws; the tongue, lips and mucous of the cheeks are usually swollen but rarely ulcerated, there is a salivation, the breath is foul and mastication is painful."

THRUSH.

"Thrush or Parasitic Stomatitis.—This affection most common in children is caused by a parasitic fungus, it belongs to the family of yeast fungi." It is said to be contagious, so that the utmost care should be taken to keep the mouth scrupulously clean, and should be thoroughly rinsed with lime-water, or other alkaline fluids, "such as bicarbonate of soda, (a dram to the tumbler of water may be employed). When the patches are present these alkaline mouth washes should be continued after each meal."

An antiseptic spray should be used in the mouth to reduce inflammation. Food should be of the best kind, that will give the most nourishment to the patient and tone up the system. "Thrush does not appear in cleanly mouths, it is only found when the secretions are vitiated and spores of some vegetable parasite."

A Mr. B—— called at my office to consult me in regard to his mouth. He has been to his dentist and received treatment for a time without relief, who then sent him to his physician, and his physician in turn sent him to me. His gums were badly swollen on a line with the grinding surface of his teeth, so that when he closed his mouth, he struck the gums before the teeth. The result was, he was obliged to take liquid foods. He was unable to sleep either night or day, and the saliva was running from his mouth to such an excess, that he was obliged to keep a handkerchief there nearly all of the time. I gave him the first treatment on August 30th, 1901, followed by two others on that day. The treatment consisted in spraying his mouth with an antiseptic, and using the tincture of iodine to paint his gums. I might add that the antiseptic preparation consisted of formaldehyde, carbolic acid and oil of peppermint. After receiving the treatment on the first day he slept soundly that night, and after having treated him for a short time he recovered very nicely. One year and three months from that time, his wife came to me with the same trouble, only hers was not quite so severe, and after receiving similar treatment the apathy yielded readily.

On November 5th, 1908, a Mrs. L—— called upon me for treatment for aphthous stomatitis. She had ulcers in her mouth which were very painful, and after receiving the first treatment the pain subsided. I saw her on the following day and found that her condition was very much improved. I saw her on the 11th of November and found that the stomatitis had nearly altogether disappeared. I saw her again on the 13th and found that she had recovered entirely.

Nature has made us in a physiological condition, and she is ever striving to maintain that state. "Repair and waste are continually going on in the human system," and when we have a pathological condition in the oral cavity, it is brought about by some disturbing elements and irritants which cause stomatitis. In reviewing the writings of different authors on stomatitis, they all agree that it is produced by an irritant, some think in the majority of cases it is local, and others think it is local and constitutional. Dr. Burchard says, "The complexes of oral symptoms is commonly, and also by general practitioners regarded as symptomatic of gastric-intestinal and hepatic disorders, as doubtless they are, but the casual relationship is in many cases probable, that the disturbance of digestion are fermentative in character and the organism causing them to find their way to the stomach from the mouth, which was first affected." Doubtless what Dr. Burchard says is true, then is it not logical to conclude that the bacillus of tuberculosis, typhoid fever, and other diseases of the body have their habitations in the oral cavity, where food digests are allowed to accumulate and

become impacted between the teeth. It affords a culture medium for fermentative organisms, then ill-fitting crowns, poorly constructed bridges, over-lapping fillings, decayed teeth and tartar, all are direct irritants and help to increase the inflammation. All of the solid and liquid foods pass through the mouth into the stomach, but when under the process of mastication it is mixed with the mucous and saliva, and who can say that there are not enumerable bacilli of different kinds taken into the stomach from the mouth. Right here every progressive dentist has his field of usefulness to humanity laid before him. Which is the more scientific man? The one who prevents disease or the man who tries to cure it? It is much more scientific, as professional men, to create a hygienic system in order to prevent diseases of the mouth, and cure so-called systemic diseases, by restoring the oral cavity to the best possible normal condition.

Is an ounce of prevention better than a pound of cure? If so, why not exert ourselves with the ounce and save humanity the terrible tax of a pound. I would commence with the mother, by impressing upon her, not only the necessity but the duty of keeping her gums, teeth, tongue, inside of cheeks and lips free from all foreign deposits during gestation and lactation. See that no impacted food remain between or around the teeth to cause putrefactive-fermentation, that all the teeth must be well filled, cleaned and polished, and the oral cavity kept in the best possible hygienic condition, for her own safety and for the child yet unborn. The young child should have its gums, tongue, lips and inside of cheeks washed with a mild antiseptic, after each nursing. The prophylactic care of the gums and teeth required to promote cleanliness, usefulness, healthfulness and happiness is of the most vital importance, not only to the present generation but to those yet unborn. As soon as the first teeth are erupted the mother or nurse should be instructed how to care for the teeth. She should supply herself with an orange or a pine stick whittled flat at one end, as the flat surface does not slip as easily as the round, and there is less danger of bruising and lacerating the gum tissue. A small piece of medicated cotton should be twisted around the end of the stick and dipped into an antiseptic preparation, and thereby carefully remove all of the mucous and milk digests that accumulate on the teeth. This course of treatment should be continued as long as the temporary teeth last, and in fact, there should be no laxity in treatment intervening between the temporary and permanent teeth. The ounce must be used as a prevention, the same as a good housewife would use a polish to keep her gold and silver plate untarnished. I think I hear some of the gentlemen saying that it is an ideal condition but can never be realized, to this I would say yes most emphatically, it can. In the first place, we must have our ideals, it is a necessity to stimulate us to higher and better things. The trouble is we have not started right, we should use the ounce and use it effectively. Remember this is a complex system, and the ounce acts as the lubricator, that lessens friction and keeps the whole machinery running smoothly. If we only brush our teeth, and

neglect the gums, tongue, cheeks and lips, do we expect to keep the oral cavity in a perfect hygienic state? It would be just as reasonable and sanitary to wash our hands and face and let the body go unwashed, as some of the Saints did, for instance,—“St. Hilarion lived his whole life in utter physical uncleanness. St. Simon Stylites was in this respect unspeakable, the least that can be said, is that he lived in odor and stench intolerable to his visitors.”

I presume there is scarcely a dentist in this room who has not at some time in his practice, been treated to a similar odor emanating from the oral cavity, for the want of the ounce of prevention. The deciduous teeth should be carefully watched as for caries, and when noticed, if superficial, it should be removed and surface polished, if deep seated cavity should be prepared and filled. If it becomes necessary to extract a deciduous tooth, do so, and in order to prevent the teeth moving and producing mal-occlusion, a brace should be constructed from one tooth to the other. The brace should be so arranged as to protect the gums between the teeth, and also used for mastication. “The retaining of the deciduous teeth in their normal position aid mechanically to develop the alveolar process as well as the jaws. When it is evident that the presence of a temporary tooth has deflected from the line of eruption of its permanent successor, it should be removed so as not to cause irritation.”

“Causes of inflammation are injuries of any description which induce a higher degree of inflammation than those producing active hyperaemia. The source of these irritations are many and varied, they may be included under the head of mechanical violence, and action of physical force, and the action of chemical substances, and the action of parasites and their products. Any one or more of these irritants acting upon a vital part may induce the inflammatory process. Inflammation is but nature’s way of ridding the tissues of an intruding substance, an irritant.”

“The oral mucous membrane, the tongue and the secretions of the oral cavity are standard indications, in making diagnosis in nearly all the ailments of the human body.” Ignorance of the oral disease is a lack of education. The labor we bestow on the oral cavity with the ounce, is the price we pay for the prevention of many systemic and general diseases. The ounce saves, the pound kills.

The diseases of the gums peridental membrane and alveolar process have no geographical limit. They are found in the torrid zone, where the food is chiefly fruit and nuts, and where the winds are tempered to the shorn lambs. It is found in the temperate zone, where the food is of a mixed diet, of animal and vegetable, and where we have the ever changeable seasons. It is found in the frigid zone, where the inhabitants live on fats and oils, and their homes are in ice and snow-bound caves, and their bodies are dwarfed by the rigor of the cold. It is found amongst the South Sea-Islanders, where the air is impregnated with the salt moisture of the sea. It is found on the Islands of our Lakes, where the air is moistened

ly fresh waters. It is found among the North American Indians, who live very close to nature, and whose tents are made from the boughs of trees to shelter them from the storm and sun, ascend to the top of the highest mountains where the air is full of ozone—and it is there, and descend in the valley where the miasma and the fungi grow—it is there.

So you see that it is found in all climes, under all conditions of heat and cold, wet and dry. It does not exclude any race of people, but includes all civilized and uncivilized.

It is not confined to any particular class of people. The rich in their palatial mansions, those in the middle walks of life, and the poor in their hovels, are all made victims by this destroying monster. In short, where ever man is—it is. "In the museum of Constantinople are the skulls of soldiers who fought at a battle 328 B. C., and their jaws bear the marks of this disease." The Acadians, the Egyptians, the Greeks, the Romans, the Syrians, the Arabians, and all of the early races suffered from this disorder.

I have quoted from Drs. William Osler, H. H. Burchard, G. V. Black and Eugene Talbot.

DISCUSSION.

Dr. L. L. Barber: It is a fact that no matter what one says on any given subject, any other one having the slightest idea of *that* subject, very possibly can add to or change some of the things said, and still be within the bounds of reason; while anyone can find fault, ask questions, enter objections, etc., until one becomes tired of the whole thing. I am not before you to find fault, or criticize Dr. Brown's paper, but simply because I have been put on the program to discuss it.

The title of Dr. Brown's paper is, "Diagnosis and Treatment of Non-Surgical Diseases of the Mouth." As I look upon this title, it implies far more than the average dentist, (by the attention he seems to pay to such matters), realizes. I wish Dr. Brown had given a little more time to the diseases and their treatment, rather than so much time to "How to prevent them." Not that the preventive treatment is not very important indeed, but it does seem to me that "Diseases and Their Treatment" does not imply the prevention of disease.

What Dr. Brown has said in regard to treatment of the common diseases of the mouth, is, so far as I know, up-to-date and thoroughly scientific. It is, indeed, an unfortunate fact that the care necessary to prevent many of these cases of Local Catarrhal, Infective Catarrhal and Ulcerative Stomatitis, is not given by the patient, because the attending physician does not acquaint them with its importance, and not until the case is well developed does it come to the notice of the dentist.

Ulcerative Stomatitis may be due to local causes or may be the indication of some general disease manifested through tissues that have had their vitality lowered by general systemic disturbances, and as the oral conditions are not constant, so that at different periods they may favor the development of some special form of bacteria, it is equally as important to look after the general as it is the local conditions.

Thrush is not only not found in healthy mouths but not likely to be found in unclean ones, unless the resistance of the sub-epithelial tissue is so lowered by constitutional or local disease that it is easily invaded.

The prognosis is favorable, provided the deposits (yeast fungi) remain localized. But once the pharynx and esophagus become involved, very considerable debility may be looked for, and usually you are not disappointed.

TREATMENT.

Special attention should be paid to neutralizing the acid conditions of the secretions. For this purpose borax in a three per cent solution given internally, for children a teaspoonful and for adults a tablespoonful every two hours and as a local wash for any form of stomatitis, equal parts of Iodine, Beachwood, Creosote and Alcohol. This, combined with a good tonic such as: Tinct. Ferri Chlorid, 5i; Quinine Sulphate, 5i; 15 drops in water every three hours.

The constant cause of thrush has not yet been established with certainty.

Some believe the etiologic factor to be a sprouting fungi; others a mould fungi; while others still have other theories. The presence of the fungus, however, I believe establishes the diagnosis.

What the essayist has said about the cleansing of nursing bottles, the mouth and teeth of children and all that, is worthy of consideration. But how many dentists ever go so far as to examine the mouths of those even who come to their offices, and are able to, or do, at least, notice when some pathological condition of the soft tissues exist. I believe that until recently, at least, the soft tissues of the mouth of 75 per cent of adults were in a pathological condition.

What the essayist says about the bacillus of tuberculosis, typhoid fever, etc., having their habitation in the oral cavity, I think, has at least ground for the belief. At least, if some of the mouths which contain umbrella ferrules for crowns, amalgam fillings filling the whole interproximal space, bridges that are not fit to be any place, save in the junk heap. *I say, if there are any kind of germs that escape that mouth I am very much surprised.*

Dr. S. B. Dewey: After reading Dr. Brown's paper, it left me very much in doubt and longing. I was in doubt as to the real diagnostic points that had been presented in the paper; and I was longing for those points that should have been presented in the paper to help us out in diagnosing these diseases of the mouth which he mentions.

In the first place in order to get at these diseases, we must have some idea of their source and classification. We have these catarrhal inflammations of two kinds, *inflammatory* and *ulcerative*. Then we have the division first of the catarrhal into local, we have simple local, then we have infective local. The infective local is divided into the classification according to the probable causes. From infection we might have for instance the fermentations, and we have those that are caused from the typhoid germs, and the germ of gonorrhoea. In all of these diseases there is more or less catarrhal inflammation in the mouth in their beginning. Then in the systemic portion of this catarrhal inflammation, that is derived from the system, we have the divisions of eruptive fevers, typhoid, syphilis, tuberculosis; and then we have another feature and that is the elimination of poisons from the system through the mouth; the elimination of such poisons as lead, mercury, iodids, etc., and that calls to mind something that Dr. Black called our attention to long ago with reference to what he called the gingival organ around the neck of the teeth, just beneath the gum line; an organ while it didn't assume a purely glandular form it was very similar to a gland and it appeared to have a faculty of eliminating certain things from the system; and I think that is one cause of our pyorrheal troubles, the beginning of them, the effort to eliminate poisons at the gum margin, the gingival line that Dr. Black speaks of. Then we have a farther classification; we have the ulcerated condition and in that classification first we have the local ulcerated condition. The local ulcerated conditions are those which have been spoken of as apthia, thrush, herpes, including the common canker of the mouth, and syphilis primaria. Then we have from the systemic side of it the syphilis secondary and tertiary and tubercular local. Now remember that all these inflammatory conditions that are found in the mouth, and with two exceptions, are all superficial, have to do with the superficial layers of the mouth. The two exceptions are the third stage of

syphilis and tubercular local. They involve the deeper structures. All the others are confined to the upper layers of the mucous membrane of the mouth. Now the common canker sore is one of the best ulcerated conditions—well, before we get to that we will talk about the simple catarrhal inflammations that we find in children. We find those particularly prevailing in the bottle fed children whose nursing bottles are illy cared for. The nourishment of the child is poor; the whole general system is in a low state of vitality and they are just in that condition that the whole mucous tract is in a condition to carry to any part of its course any bacteria that may have accidental lodgment in the mouth; that may be there any place waiting to invade any tissue that has thrown its gates open through lowered vitality, ready to find a proper medium in which to begin their work. So that while I do not think in many of these cases that it is any one particular germ that may be causing this inflammatory condition; but any of the germs may, under proper conditions, under the proper environments, excite these inflammations that we notice in the mouth. He speaks of the thrush that is supposed to be caused by a fungus, and of the thread variety; it simply goes between the epithelial cells or plates; does not go beneath them, and he made the statement that it was not found in cleanly mouths. Now this matter of thrush is a disease that may be communicated. If the thrush condition comes in contact with an abrasion in the adult mouth it will communicate the disease to that party. In fact the worst case of thrush I ever saw was one in an adult with a cleanly mouth, and, by the way, you must remember that this thrush fungus thrives only in acid medium. This indicates that the alkali washes are a benefit in the treatment of it. We find the patient,—and in the adult especially and it will be in the child if it is beyond the nursing period,—we find that the adult who is suffering from thrush if he eats a meal or two of acid foods, tomatoes, for example, the disease is aggravated, and I have seen cases where one or two meals of tomatoes would so inflame the oral cavity and the whole alimentary tract was one continuation of these ulcers and sores. Dr. Brown recommends the use of antiseptic washes after feeding children with stomatitis. I should rather recommend their use before feeding; that the foul matter be washed away before nourishment be taken.

Now the common canker sore is one of the best points to study or one of the best ulcers of the mouth to study in the simpler forms, because it is common not only in children, but in the adult and one which the ordinary operator is more liable to mistake for the specific variety of ulcers that may be found in the mouth, that one needs to understand the nice little diagnostic points between them. The common canker sore is very much like the primary syphilitic sore with exceptions. The primary syphilitic sore we find in the mouth is always single, and it is regular in its formation as a rule. The canker sore is irregular and it is multiple. The canker sore is usually found or has a preference to the tissue where two mucous surfaces unite, as from the cheek to the tongue or gum. They are covered with a pasty covering very much like the syphilitic sore, but the syphilitic sore always includes lymphatic involvement. The nearest lymphatic gland is always sore, and the syphilitic lesion is not painful, it is sluggish. The canker sore is very painful and no lymphatic involvement.

In reference to the third stage of syphilis. An ulcer found in the mouth that persists under the usual antiseptic washing and treating must be held in suspicion. These ulcers involve the deeper connective tissues, periosteum and bone—and need not be confounded with catarrhal inflammations of the simpler forms.

DENTAL MEDICINE*

By W. F. Knemoeller, D. D. S., Cincinnati, Ohio

IN choosing the subject of Dental Medicine for a paper to present to this society, I feel I have undertaken a mission which it would be impossible to do justice to in a short paper. Medicines, as applied to dentistry, cover a large field and any one drug might be discussed in quite a lengthy paper. It is not my intention to go into details as to the origin, chemistry, or manufacture of different remedies, but to generalize, choosing some of the most important ones and mentioning some of their uses. It is also not my aim to present anything new on the subject, but hope that my poor effort may create a thorough discussion and, in that way, bring out some points at least, which may be of service to us.

In the general practice of medicine, drugs have been, to a great extent, discarded. By this I mean that physicians do not use or prescribe the amount of medicines as in years gone by, hygienic methods and surgery being responsible therefor. Such can hardly be said to be the case in the practice of dentistry. The necessity of relieving severe pain, the many needs of antiseptics in the oral cavity (it being possibly the best breeding ground for bacteria) makes it imperative for the dentist to utilize drugs to a great extent, although we cannot help but admit that we also use more than are necessary.

Possibly, of all classes of medicines we, as dentists, use more antiseptics than any other. Of these the essential oils are most popular and justly so, as they are mild, harmless and thorough. It would be impossible and unnecessary to touch on all of these. We are familiar with them and know their value. Will mention one which is, perhaps, the most powerful and desirable, there being very little danger of staining tooth structure, as might be the case in some of the other essential oils.

Oil of eucalyptus or eucalyptol, which is the active principle of the oil and of which the oil should contain about 80 per cent, has become quite popular in the treating and filling of root canals. It is slightly irritant, but this may be modified by the addition of a small quantity of menthol or thymol. It is equally serviceable by itself or in combination with carbolic acid or cresol.

While on the subject of eucalyptus, a preparation worthy of mention is the tr. eucalyptus, which is a splendid haemostatic especially useful in excessive hemorrhage after extraction.

Iodoform, although used to some extent in dentistry, is objectionable on account of its odor. It is a good antiseptic, but not lasting. Even in general surgery it has been discarded to a great extent. At the last state meeting a new medicated gutta-percha point was exhibited, containing iodoform and eucalyptol. This medication is certainly of no advantage, for if our work is done thoroughly, that is, if the root canal is well cleaned

*Read before the Cincinnati Odontological Society.

and made aseptic, there is no need of such a filling material, and if our work is not thorough, trouble is likely to occur just the same.

Aristol, which is a combination of iodine and thymol, is possibly preferable to iodoform, as it is odorless and has the same properties.

Iodoformogen, one of the newer remedies, is a combination of iodoform and albumen. It also is odorless and is preferable to iodoform on that account.

Cresol, which has taken the place of phenol to a great extent, because it is much more powerful, is miscible with water and possesses an anodyne property which makes it desirable in mixing with formaldehyde, which irritating action it modifies. Dr. Buckley recommends a mixture of this kind, which he calls formo-cresol, as a good dressing for putrescent root canals.

Hydrogen peroxide probably the best known and most widely used antiseptic, is also the most abused. Many of us, no doubt, use it so often and for so many different purposes that it has become a hobby and instead of riding it carefully and slowly, we ride it to death. We use it for treating root canals, which we should not, and for any other purpose where an antiseptic is indicated. I don't mean to discourage the use of it by any means. It has its place and its uses and we do get results when the solution we use contains enough hydrogen peroxide to do good. According to the U. S. P., the solution should contain 3 per cent of hydrogen peroxide, equal to 10 volumes of available oxygen. In this strength solution it compares favorably with a 1-2000 solution of bichloride of mercury. But owing to its instability, it losing its strength very fast, it is in most cases of no more use than a good mechanical cleanser. Its action is quick and immediate, but not lasting. Would not a warm solution of bicarbonate soda do as well or better under these circumstances? Merek & Co. make a solution of hydrogen peroxide containing 3 per cent of H_2O_2 . If a preparation of this kind was used to prepare our 3 per cent solution as we needed it, we might then realize results we expected from it.

Sulphuric acid, while a powerful escharotic, is also a splendid antiseptic in some forms of dental lesion, and when carefully and rightly used, will always find a convenient place in our office. For instance, in the treatment of chronic alveolar abscess with a fistulous opening, it is possibly the best of an heroic remedy. It not only acts as an antiseptic, but also as a powerful stimulant and escharotic.

Zinc chloride, another well known antiseptic, we find very useful in the treatment of ulcers in the mouth, in the relief of hypersensitive dentin, soft and spongy gums, gingivitis and pyorrhoea. It acts also as a caustic and astringent, being preferable to nitrate of silver, as it is less painful and does not stain teeth. It is best used in concentrated liquid form. It being a very deliquescent salt, it soon turns fluid and in that form is best used. As an astringent antiseptic mouth wash a solution in peppermint water or

alkaline antiseptic solution, strength about 3 or 5 grs. to the ounce, is especially useful.

Echinacea, an alcoholic preparation of the drug of that name, although not used to any great extent in dentistry, is of great value especially in the treatment of alveolar abscess and antrum diseases. It is a strong antiseptic and allays inflammation.

But when all has been said about antiseptics, bichloride of mercury stands pre-eminently above them all even in the treatment of root canals, for which it has been discarded owing to discoloration of tooth structure. Perhaps I am wrong, but if the contents of the root canal has been as thoroughly as possible removed, a 1-500 solution in alcohol should not stain tooth structure.

It might be well while speaking of antiseptics to mention those that are useful in mummification of pulp. Dr. Miller places the Ess. oils, excepting oil cinnamon, in the doubtful list owing to their diffusibility, and iodoform, iodine, naphtholin, and such as quite worthless. Those of most value are the mercury salts, sulph. copper and oil cassia. A combination of Cu. S. O 4, alum, zinc oxide and oil cassia would best answer all requirements.

Yet, with all this abundance of good antiseptics at our disposal we are prone to discard them and use some of these patented cure-alls. I am afraid that the use of these remedies, some of which have virtue no doubt, tend to make us careless. We may not take the same care and time to cleanse a root canal thoroughly, depending more on one of these cure-alls to avoid further trouble. Nature, ever kind to us, may take care of the offending member for a time, but sooner or later we are sure to have trouble. The question arises in my mind, "Are we honest and conscientious and are we doing our duty to our patients in using such remedies, which are convenient, but of which we know nothing?"

Among other classes of remedies besides antiseptics we might consider of importance local anodynes, counter-irritants, and local anesthetics. Among local anodynes we again have some of the ess. oils, such as oil cloves, oil cassia, oil cajeput and oil wintergreen. Either of these by themselves or in combination with cresol and cocain afford us a splendid remedy for odontalgia. Another simple remedy, especially in deep cavities, a solution of tannic acid in alcohol is especially useful.

Orthoform, another of the newer remedies, has some anesthetic and antiseptic qualities and is a powerful analgesic especially useful to relieve pains after extraction and in pyorrhoea pockets. It is best used for this purpose in dry form on cotton pellets forced into sockets. It is freely soluble in alcohol, but very slowly in water.

As counter-irritants, possibly, the best for our use are tr. aconite and iodine, preferably, a mixture of tr. iodine, aconite, menthol and chloroform.

Local anesthetics. It is generally recognized that a drug or combination of drugs which simultaneously produce local anemia and inhibition of the sensory nerves in a circumscribed area of tissue is the logical solution of local anesthesia. Such a combination of drugs we find in cocaine and adrenalin. Such a combination is in the majority of cases perfectly safe. But care should be used in the dose of adrenalin, not injecting more than 1 or 2 drops at a time, as retardation of the flow of blood to part is liable to be too long and then there is danger of sloughing.

In the place of cocaine, novocain, one of the newer preparations, can be used. It is claimed to be six or seven times less toxic than cocaine.

In connection with this subject of local anesthesia, I can't help but to again call attention to the many patented local anesthetics on the market. If nothing else should keep us from using them, the cost alone ought to do so. We can easily prepare a preparation at one-fourth the cost and then know exactly what we are using and what to expect.

Cocain and novocain can be obtained in tablet form with or without the addition of adrenalin, and as they are easily soluble in water, it is a simple matter to make a fresh solution whenever necessary.

A branch of dental medicines, which I fear we do not give enough consideration, possibly because we feel we have no right to the same, is systemic or constitutional treatment. The question as to our right of prescribing or administering systemic remedies has been frequently discussed, and, no doubt, most of us feel that such cases should be referred to the physician. But we cannot all control our patients and sometimes find it absolutely necessary to prescribe. Dr. Sweeney mentioned at our last meeting of having prescribed iodide potash for a patient with splendid results. I could mention several cases of like kind. In chronic alveolar abscesses iodide of potash administered in doses from 5 grs. gradually increased to 20 or even 30 grs. will give good results, especially if patient have a history of scrofula or syphilis. In pyorrhoea the administration of iodide of potash, salicylate soda, or lithia salts, have proven to great advantage.

In conclusion let me add that I did not expect to bring anything new before the society, but hope that this paper may cause a discussion from which we may all learn. At the same time, the thorough knowledge of medicine and the intelligent use of the same will tend to place us on the same plane with the physician and our patients and the public will then realize that we are a little above the old tooth carpenter.

NATURE works after such eternal, necessary, divine laws that the deity himself could alter nothing in them.

—Goethe

FACTS *

By F. H. Essig, D. D. S., Dowagiac, Mich.

I GREET you with the fact that all professional men should be teachers as well as practitioners. Early education covers a multitude of pain, while ignorance and indifference on the part of the parent causes deformities and diseases that are hard to correct.

Every dentist should give to the public as much information in regard to results that are sure to follow neglect of the teeth, both temporary and permanent, as his time will permit.

Our public school system, throughout the country, is not doing what should be done to educate the child on this important subject, and I am sorry to say that we are a little to blame for this condition.

You all know the remedy, as you have been told by essayists before me, but have you done your duty? No, far from it. Neglect on your part has caused the child nights of pain, and a weakened constitution.

We must not stop with the school room, but must reach the parent as well. This must be done in our every-day practice. Don't be afraid to tell them what you know, and what you don't know, attend dental societies and find out.

Let us be teachers as well as practitioners. I feel confident that this one fact that education of the public in regard to their teeth, has been more neglected than any other thing in our profession, and it is time for us to wake up from our lethargy, in justice to ourselves as well as to humanity.

Fact No. 2. We are not neighbors, I mean professional. We are nearly all selfish, narrow and even jealous of each other, in our every-day strife for business, and why this condition? Nothing more than the love for the almighty dollar.

How easy this could be remedied, by seeing the good in all our brothers, and forget that bad exists. A little Christian Science, if you please. Get rid of those grouchy feelings, and, when you feel them coming on, go fishing.

Write the faults of your professional brother upon the sands, their virtues upon the tablets of your memory, and in so doing you will have a better feeling, one towards another.

Again, we occasionally lose sight of our profession, and drift into trade. Not long ago the remarks were made by one of our brothers that dentistry was only blacksmithing with a little moulding thrown in, and I am afraid this is true with some, but not with the majority.

We, who have spent several years of hard labor, say nothing of the cost and self-denial to obtain the diploma, so much coveted, cannot accept this definition. We are told that a profession is an occupation that properly involves a liberal education, and mental rather than manual labor.

*Read before the Southwestern Michigan Dental Society, April, 1909.

To be sure, we differ in our professional skill, according to our mental capacity. Even, thus, we do not need to lose sight of the fact that we are members of the greatest and noblest profession that exists today.

I might go on at length and tell you the reasons that tend to make us tradesmen, but it would be time poorly spent, and I will leave it for you to decide. I only ask, when you return from this meeting, diagnose your case carefully, and if you find you are drifting, get busy, and work for the higher ideal we all admire in a true professional brother.

Another fact, which I wish to leave with you for your careful consideration, is, *Dentists are poor Business men*. From this I do not wish to infer that all come under this class, but the majority.

I can see your expressions change at this statement, but it is true, nevertheless, proven to me by several years of observation. How many of you own brick blocks, farm property, or even mining stock? Now, don't all get up at once, to let me know your real worth, as I know you would be in the minority.

I ask, why is this? We do not possess the preparatory business education, too anxious to get to earning the dollars, and, when we get them, let loose of them too carelessly. The old saying is true, with the average dentists,—“money earned easily, goes freely,”—but I hear some one say, to be up-to-date you are required to buy all the new appliances that are on the market. That is true with some of us, and that is one reason why we are poor.

If we bought everything that the dental agents urged us to buy, we would all be so poor we couldn't get out to a dental society once in seven years. Buy what you need, and invest the balance in property that will make money for you. By the way, don't go into grape culture.

The successful business man of today is one with a system. We overlook the little things, and keep the larger ones in mind, while success depends on just the reverse. Watch the little things, and the large ones will take care of themselves.

Don't lay awake nights and keep thinking
Of the things you might have done,
But bury the past, and just hustle
And the reward will be a good sum.

DISCUSSION.

Dr. T. G. Rix: I was very much entertained by the paper read by my brother Essig, and as far as I have gone (which has not been very far) I endorse every word he has said, especially about investments.

I have had some experience in investing my little surplus at times and they have all “gang a glie” as the Scotchman says. I once had a little surplus invested in a publishing business in Kalamazoo. I had the money and an old elder by the name of Chapman had the experience. About three years afterwards I had the experience and he had the money. (Laughter).

Some time ago I had a little surplus and I went into the peppermint business. I made a little money out of the peppermint business. A lot of you boys visited my peppermint establishment, I taking you down on a big wagon. I remember about thirty

or forty of you. I made a little money out of that, but I could not be satisfied with it, and so I went into the sugar beet business, and I am about five thousand dollars out of pocket.

As Brother Essig has said, if you will invest your money in real estate, something that is tangible, something that you can take hold of, something that you cannot dispose of in a minute, or by playing poker without holding the best hand, spending it in that way,—put your money in real estate, that is the safest thing in the world, and let it rest there, taking the benefit of the increased values. There are many other ways in which you can invest your surplus money, but I never have happened to find them. I have invested in a good many things and especially in all of the appliances that have ever been invented since Noah came out of his ark. I have got a morgue up in my barn and another in my cellar where I have derelicts and relics of all these inventions and in that way I have managed to keep about even with the world. Not much surplus! But, gentlemen, there is one thing I know and that is I am pretty nearly on my last run. I have practiced fifty years in the state of Michigan and am now about to quit the race. I did think that I would want to die with my boots on in the profession, but I have thought better of that lately and I do not propose to practice much longer.

I want to say one other thing in regard to the subject of jealousy. I never was jealous, never had a jealous drop in my veins since I became a dentist. I never had anything that I would not impart to my brother dentists, particularly when they would approach me and I had anything that was good and I thought it would benefit them, I always gave it, and on the other hand I never had a dentist refuse me anything or to impart to me anything new that he had, because I would try to find out if he tried to keep it. I would go in and say, "Why, what have you got new? Have you got anything new?" If he shut up like a clam I would give him something new that I had and pretty soon I would make him open up. That is the way to do it. You go into an office and claim to know it all, you will get nothing; but you go in and make out that you are a good fellow, if you have anything new, impart it, and you will soon make them open up and be as good as you are.

Dr. A. L. Le Gro: I think there is substantial food for reflection in Dr. Essig's paper.

He speaks of educating the children at school, educating the public or educating the laity.

Now, we, in Detroit, have taken this subject into serious consideration and we think that during the next few generations there will have developed a desire on the part of the people for education on the teeth, by about three hundred per cent.

We have recently established a clinic in Grace Hospital, and every dentist in the city is taking his turn at a half day on Saturday by working in this clinic where there are proper chairs, and instruments and paraphernalia and stock required to do the general operations of dentistry. Now, this is possible in the smaller towns, where you do not have hospitals.

When I first went to Detroit I saw the necessity of that work and was interested in it and I offered my services only one hour a week, that being all the time I thought I wanted to give to it, and went to one of the orphan asylums. This work is now being done at Grace Hospital by a staff of dental surgeons.

Now, it is quite necessary, as the essayist has said, that we should educate the mothers and parents of these children. We are teachers. We call ourselves "doctors." I never thought much of that title "doctor"—in fact I don't believe I ever signed it in my life time; I don't care whether anybody calls me "doctor" or not. It does not have much significance to me simply because I feel that I have not done my duty as a teacher. "Doctor" means "teacher." "Doctor" means one who teaches. And if you are not going to do teaching, don't allow anybody to call you "doctor" because it is a misnomer. Now, in a country town or in a city it is very easy for the dentists

to get together and set aside a certain half day, a certain few hours in a week to do work for children who are deserving, and a committee could pass on and find out in regard to their relatives and see whether they were worthy and entitled to come under that class. It could be very easily done, and in the next ten or twenty years will be seen a most wonderful result in that line of work.

What I wanted to lay particular stress upon, is one point the essayist brought out in his essay, to this effect—that we are all poor business men, or the majority of us are. It is very rarely you find a dentist who is a real business man. It is because he coops himself up in his office all day and does not become identified with municipal business and affairs in the community in which he lives. If he were to come more in contact with these business men he would necessarily become a better business man. In Detroit we have the Detroit Board of Commerce—and it is one of the most healthy organizations in the whole United States, and some of the leading dentists of the city are becoming identified with this organization. We meet there men who are capitalists, men who are big men, men who are captains of industry and they are all there every time we meet this particular body of men. I say that a dentist should not coop himself up in his office all the time. He should become identified with his own municipal interests and become thoroughly conversant with its conditions.

A gentleman came into my office the other day and he said, “Doctor, do you know what percentage of men comprising the population in the United States over 21 years of age, are making \$85 a month or more?” Well, I made a guess that I thought would be a liberal one, I said about fifty per cent or sixty per cent. He took out a little book which came from the United States census department in which it said but fifteen per cent of all those men in all the United States were making \$85 a month or more. Now, conceding that a dentist makes no more than \$85 a month, isn’t it a blessed heritage to be a dentist, and to be identified with this profession, if we can make that much money and be a part of this blessed fifteen per cent? Then you go a little higher, and only three per cent of the population of the United States make \$3500 a year. Now, those of you who are making \$3500 a year, you are among the three per cent of these men in the United States. So I say it is a blessed heritage and furnishes a foundation upon which to start. If you become identified with business interests in every way, there is no reason why we should not have just as rich men in dentistry as we have in any other profession.

Dr. Essig: I thank you for the discussion that this paper has produced, although I would have liked to have heard still further discussion. I feel well pleased with what has been said. If I had thought it wouldn’t have taken longer I would have talked for an hour and a half or two hours, for if I had given you what I had written during the last month, I would have probably occupied a couple of hours, but I cut it down just as close as I could in order to get this discussion with reference to it. And I want to thank Dr. Le Gro for bringing out the point which I wanted to bring out in the discussion; and I feel that we all might go home from here and put into practice these suggestions, and especially in our schools, our every-day practice,—this education. It is up to us, as practitioners, men of teaching, to do that; and in years to come we will see a great change in the condition of the teeth.

I was thoroughly disgusted with myself on Sunday morning and yet although I have been in practice twenty years, I was up against one of the hardest propositions that I ever met with. I didn’t know what to do. I will tell you what I did do; it might have been wrong, but in my judgment it was the best thing under the circumstances. I was telephoned to at the residence about 12 o’clock to come to the office, there was a baby girl, three years old, suffering intensely from an ulcerated tooth. I went to the office and found the sweetest little girl that I ever saw; her big brown eyes looked into mine with all the confidence in the world that she was to be relieved of that tooth. I thought it should not be extracted at first, but I thought I would

simply treat it. I started in heroically, but the child was suffering so intensely with pain, the tooth was so sore, that the child could not stand it, and I finally had to give her chloroform and extract the tooth. I never saw an expression so changed in my life as there was on that girl's face when she was relieved of the pain. Of course it was purely the fault of the parent, and I told him right in the chair, and he learned a lesson he said that he never would forget and from that time on every child that he had would have his or her teeth properly looked after a number of times a year. Now, these lessons must be taught the parents every day, in our every-day practice and we will get rid of these embarrassing conditions. If we will just forget ourselves, forget our greed for the money that is leading us to live for the patient and live not only for the patient but the child, the children in the coming ages will reap the benefit. It is surprising to see how many intelligent people of today are ignorant of the teeth. There is not a day passes but what they come into the office and I will spend five minutes trying to satisfy them that the first teeth, the permanent teeth, the six-year-old molar is a permanent tooth. That occurs every day almost. They ought to know better, but they have not the education. I say we are to blame. We are the teachers who should teach. I say let us get a hustle on us and go home and do something.

THE INFLUENCE OF HIGHER EDUCATIONAL REQUIREMENTS ON THE DENTAL PROFESSION*

By Dr. J. K. Douglas, Sandusky, Ohio

WHEN we compare the dental profession of a half century ago with the profession of today, the great advancement that has been made is very flattering to say the least. It was not so many years ago that the requirements for one to take up the practice of dentistry were so limited that nearly anyone who was willing to apply himself for a very short time could become a full-fledged practitioner. There was a time when, if one served as an apprentice for a while with a preceptor he was considered eligible to go into practice.

Since about the year 1839 or 1840 many dental colleges have been organized; at first with a course of studies very limited compared with those taught today. Graduates of these colleges were licensed to practice without examination from state examining boards. But with the continual revision of dental legislation and college requirements the profession is being placed on a basis with other professions, as it should be. The class of men who go into the practice of dentistry today is necessarily better educated, for it is required in many states that they have a high school education before entering college; and in others the equivalent of three years in high school. They must attend a dental college giving a course of three academic years of about nine months each. This course includes about fifteen branches, with required examinations in each, besides the many laboratory courses and the operative and prosthetic course which embraces all of the new ideas that are being brought out by the profession and which are coming so fast in the later years that it is hard for the colleges to give them all the time needed during the college course. And when the

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graduate has finished all of his college work and received his diploma he is not yet eligible to practice, for the laws of nearly every state require him to go before an examining board and pass a satisfactory examination in some fifteen branches besides doing a practical operation to the satisfaction of the board.

Now what is the significance of these requirements to the dental profession? We should have coming into the profession men better qualified to properly teach the general public the necessity of caring for their teeth, for the dentists of today should be teachers as well as practitioners, and teach their patients the evils of an unsanitary mouth; not only for the prevention of caries, but to keep the oral cavity free from the pathogenic micro-organisms which are constantly found there ready to be distributed through the alimentary canal and to develop their characteristic effects should the vitality be in an impaired state.

I think the time is at hand when the profession should become more interested in the condition of the mouths of school children, and they should be compelled to have their mouths placed in a more sanitary condition, and taught to keep them so. They should be taught the proper use of the tooth brush. A good example of what may be accomplished along this line is shown by the methods used by the match companies, where necrosis used to be a very common thing. It is nearly stamped out by the companies compelling their employes to have their mouths examined periodically by a dentist and compelling them to keep them not only free from caries, but in a sanitary condition. I think an examination of the mouths of school children with treatment of all unsanitary conditions in the oral cavities would have a wonderful effect upon the health of children and would decrease the percentage of contagious diseases very materially.

We have in the profession today some men with very high ideals in the way of prophylaxis that they are carrying out in their own practices. If the same methods could be put into practice by all of us it would be one of the greatest moves towards preventative dentistry. But while we are not all able to follow out the methods used by Dr. D. D. Smith, Dr. J. P. Corley, and many others that I might mention, we can profit by their experience and teaching, and have an ideal to work toward and to put into practice whenever we can. The colleges are becoming more interested in oral hygiene, and are teaching it more and more each year. The examining boards are incorporating sets of questions on oral hygiene and prophylaxis with results most encouraging. So it seems that with the teaching the students of today are receiving they are certain to bring it into their practice more each year. This would be a great step towards educating the public along these lines.

Since beginning this paper I received my November copy of the *Dental Cosmos*, in which there is a paper written by Dr. W. C. King, of Nashville, Tenn., on Dental Education. In the discussion Dr. Young, of Alabama, says that he hopes to see the day when everyone who wishes to practice

dentistry must take an M. D. degree before he is allowed to practice. While I think it is a good thing for any dentist to have the degree of M. D., I do not think it would be the best thing for the profession to make this compulsory. In the first place our profession is too large to be connected with the medical profession as a specialty, as is surgery, rhinology, and the many other branches. It has been found in the last few years, with the advancement of dentistry, that it is just as advisable for the dentist to specialize, and now we have specialists in oral surgery, or orthodontia, prophylaxis, prosthesis, and others. The same man states as his opinion that after a student had received the proper training in medicine he could be taught dentistry in one term of seven months. I should be very much humiliated if I had to think that all the scientific and mechanical knowledge needed in dentistry could be mastered in seven months after taking a medical degree. One would require special work in dental pathology, oral surgery, histology, bacteriology, besides the operative and mechanical instructions needed. I doubt very much if one could accomplish this in a satisfactory manner in two regular college years after receiving the M. D. degree, so that if Dr. Young's ideas were carried out a student would have to remain in college six years. Then, should he wish to specialize it would mean a good part of another year. Our profession is comparatively young, and it has developed rapidly in regard to education.

We must be able in a few years, if not at the present time, to see the benefits derived by state legislation, as in most states graduates must pass an examining board. It has its good effects on the colleges as they wish to have as many of their graduates pass the examining boards as possible, as it places them on a higher standard. It is also beneficial to the student, as he must prepare himself, not only for the college examinations, but with the thought in mind that he must so thoroughly understand each of these branches that he will be able to pass another examination before some board of examiners when he has finished his college course. Another very important thing to the profession which I think will show the results of higher education, together with the better legislation which we have, and that is the effect it will have on commercialism. Loyalty and respect for the ethics of our profession are not taught thoroughly enough to the student in some colleges; and I think that it should be drilled into the student from the time he matriculates until he graduates;—the great importance of ethics. With the dental laws of this state it is impossible for anyone to be licensed who is not a graduate from a college giving a specified course. So the college has the training of every man who goes into the practice of dentistry, and it is no longer possible for a man to get his training from one of the so-called advertising parlors, and with a few months tutoring in the theoretical branches be able to go before an examining board and be licensed to practice, as he once was. For these men usually resort to the same unprofessional practices that gave them their early training. So, it seems, with the requirements that the student must have to enter a dental college, and

with the better education he receives while in school, and the better legislation that we now have, it should be the means of eliminating the advertising parlors. Why should our profession be annoyed by so much commercialism while other professions are practically free from it? Do we ever see an attorney trying to get clientage by the use of glaring signs and newspaper advertisements calling the people's attention to the prices he will charge to try a certain class of cases? Nor does he openly guarantee he will win their case for them. The physician does not resort to these advertising methods to get business. No man will stoop to this unprofessional way of doing business who has the good of the profession at heart. So let us hope that the profession may show the results of these requirements more each year, and in the future be able to do more along the line of preventative dentistry.

DISCUSSION.

Dr. H. A. Smith: It has not been so many hours since a copy of the paper before us was handed me, and I have not had time to study it sufficiently to make a thorough discussion.

Have you reflected upon what is now required of one to enter dental college? The usual course of a High School is quite sufficient to qualify the student to enter upon the study of Dentistry or Medicine. It would be well, perhaps, if more emphasis could be given to the study of chemistry, microscopy and physics, which President Eliot would place in the list of observational studies. The dentist who has not acquired the power to "observe, compare and record" is sadly deficient in preparation for practice.

I am in favor of dentistry for dentists. A good dental school is quite prepared to instruct in the science and art of medicine which bears upon the practice of dentistry. With my present view I would advise the degree in dentistry first, and then if the student was young enough and could afford it, take the M. D. degree. The broader culture is always and everywhere desirable.

Referring to dental ethics, the essayist suggests that our profession is more frequently unethical than the legal or medical professions. The unethical physician finds a much better field for objectional practices than the dentist and far too many physicians take advantage of the credulity of the people. As to the lawyer, many of you no doubt have seen the unethical advertisements of lawyers who offer to obtain divorces for a small sum of money, say \$50.00 or less.

This is pre-eminently a commercial age, but a proper understanding of the meaning of a profession would no doubt do much to correct ethical abuse in all the professions. The essayist spoke of the need of educating the people in Dental Hygiene. It is learned by examination that quite ninety per cent of children of school age need dental treatment. This shows the supreme importance of this subject. The dental profession of this country and of other countries is at present doing a large amount of missionary work, and as a result preventative dentistry is beginning to be recognized as a most important branch of preventative medicine.

One problem, how to cope with the pressing needs of this great charity is now uppermost. The city of Strausburg has appropriated \$60,000 for the erection of a building for the dental treatment of school children. Dr. Jessen, the founder of this institution, in a recent report makes this significant statement: "The greater amount of dental disease the worse the physical development of the child, and the worse the condition of the child's teeth, the worse were its school reports."

On the first of the year in a city in Scotland, an institution of free dentistry for the very poor children of the public schools was opened.

Parents whose means will permit will be asked to pay six pence annually. In New York there are over 800,000 school children enrolled, and but one school dental clinic as yet established. In 48 of the larger cities of Europe have been inaugurated movements to care for the teeth of children in the elementary schools. These beginnings, though small, are significant of what might be accomplished if municipal or state aid could be generally secured.

The plan now being agitated for the establishment of a National Bureau of Public Health with a representation in the President's cabinet should have the active support of all dentists, and if true, as claimed by observers, that degeneration of our people is setting in, because of the prevalence of dental diseases affecting our youth, our profession have a special duty upon them to instruct the people—young and old—in dental hygiene.

Dr. D. E. Sheehan: The same arguments may be used to encourage higher educational requirements in the dental profession as are used to further the cause of higher education generally. Let any one travel in foreign countries, or even in districts of our own country where education has been denied the people and he will thoroughly appreciate that improved conditions are resultant from, or at least coincident with, higher education. Mr. Lester F. Ward, one of America's foremost sociologists, has truly said that "no one has ever understood by education the mere cowering of lessons, much less, simple attendance at school. Education includes any and all influences that react upon the mind." We all recognize two kinds of education, namely, the one derived from educational institutions, and that acquired from the "school of hard knocks." You, no doubt, have in mind men of superior intelligence in the latter class who mentally transcend some from the former, but you will surely agree that as a whole, a higher intellectual attainment will more surely follow attendance in those institutions whose sole function is toward that end, than can possibly come from self-culture alone.

Again, we have been impressed with the high degree of manual skill, which is often found in men of inferior intelligence, and judged from a purely economic side where manual dexterity counts for more than high mentality, such abstract cases might be used to prove a high preliminary educational requirement unjust; but the isolated case does not give a just portrayal of the whole. These same men of superior manual talent will show a still greater skill if their natural talent is nurtured by a higher intellectuality. It is a common argument of self-educated men to depreciate the studies of higher education, which include literature, art, philosophy and history, claiming they are mere theory. But their minds are too narrow to see that theory is but practice classified and recorded, and that these very studies run into and form the essence of even the most simple knowledge. Higher education is but the teaching of ordinary knowledge carried to the limits of investigation, and the man is uplifted who even attempts its achievement, though he fall short in his aim.

It matters not one whit whether certain knowledge which we acquire can be converted into cash, for the latter is not a true basis of value of the benefits and pleasures of scholarship. Not long ago great wealth carried with it the tacit belief that its possessor was necessarily a leader among his fellows, this being conceded without any investigation of one's ability to counsel, or one's honesty of purpose. But wealth is now more generally conceded to be but a means to a higher and nobler end, and that end is the plane to which a high educational requirement will surely lead us. The earlier we learn that life is enhanced by spiritual and intellectual elevation the earlier will we get most out of life. The purely commercial man will wonder at the contentment of the man of superior intellectual attainment, never dreaming that scholarship, like virtue, hath its own reward. One who has never felt the influence of higher

education is like a ship befogged at sea, while in one who once feels it, the influence of scholarship becomes inherent forever after; so let us infuse the profession with this influence to the ultimate uplifting of all its members.

High educational attainment benefits the profession in that it will bring a desire for the general uplifting of ideals, and high ideals are the landmarks to which we constantly turn for guidance. The higher the ideals of a profession the higher the general plane of those in it, for it is just as natural for a cultured man to emulate high ideals as it is for the rascal to practice the latest fraud. The man of high educational attainment is primarily one of mental capacity, for if this were not true, the possibility of such attainment would be precluded. So I will give my support to maintaining a high preliminary requirement. By opening the gates of the profession only to those of mental attainment we at least begin with a strong potentiality for spiritual and intellectual growth. We cannot originate ideas or methods without imagination, and imagination is always broadened and stimulated to greater activity by higher education. The imaginative mind portrays in fancy today the scientific fact of tomorrow. It was the imaginative mind that brought forth and made useful the hundred means and methods with which we earn our bread, and which have brought about the great advancement over the dentistry of a half century ago.

The scope of mentality is broad, indeed, and reaches from the man of small intellect, who is a copyist at best, to the genius who is wonderfully efficient in a single direction at the expense of his other faculties. We must strike a plane somewhere between these extremes from which the study of dentistry is to begin. I believe a High School diploma, if it represents work accomplished and not merely time required, is a sufficient guarantee that the possessor is qualified intellectually to begin the study of dentistry. At present the entrance requirement is "Three years completed in an accredited high school or its equivalent." The "equivalent" end of this law has always been more or less elastic and therein lies its weakness. Our present aim should be to establish a more uniform criterion.

It is not necessary for any one to be handicapped today from a want of knowledge. Correspondence schools, night high schools, educational departments of the Y. M. C. A. and many other sources are as accessible as the air we breathe, and not much more expensive. If a student whose intellectual equipment is low, but whose mental potentiality is high, be refused admittance to the freshman class, his hopes can only be deferred a year or two at most if his aspirations continue, for he may make up his deficiency in one of the above-mentioned institutions. There never existed a law but what has seemed unjust in isolated cases, and the same can be said of higher educational requirement; but the preponderant effect of a rigid preliminary requirement will be for the spiritual and intellectual uplifting of the whole profession.

WE are all of us willing enough to accept dead truths or blunt ones, which can be fitted harmlessly into spare niches, or shrouded and coffined at once out of the way. But a sapling truth with earth at its root and blossom on its branches; or a trenchant truth, that can cut its way through bars and sods, most men dislike the sight or entertainment of, if by any means, such guest or vision may be avoided.

John Ruskin

MAN: THEORETICAL AND PRACTICAL: HIS INFLUENCE IN THE PROFESSION.*

By N. B. Custer, D. D. S., Dayton, Ohio.

THE TWO parties which make up the profession, that of Conservatism and that of Innovation or Theory, had their origin with the profession itself: The comparative offices and influences of each, form the subject of this discussion.

These parties, often pulling in opposite directions, are essential to the balance and progress of the profession. Many large industries, and most governments, maintain Departments of Theory, Experiment and Investigation, and where *one* of the experiments is found to be of real value, *thousands*, which, theoretically seem perfect and desirable are found, by practice, to be defective, or not productive of the results, which experiment has led the innovator to expect.

With the profession, it is among the Theorists and Innovators that new ideas, methods, means, processes, etc., have their origin; the conservative man remembering, with compassionate smiles, the countless ideas that have been enthusiastically advanced, and are eagerly discarded becomes a man "from Missouri" when a new theory is in the neighborhood.

Dentistry had its origin in Utility; but before the first, practical step could be taken, there was the theory, the innovation.

The profession in its development has been influenced by the desire and effort to make the work more natural and sightly, to conceal, in as far as possible, the fact that repair has been made, and to cause the repair to counterfeit nature so closely as to prevent detection.

The old time practical man, cured the toothache by extracting the offending organ. The theoretical man objecting to the inconvenience, by the loss to the patient, and the unsightliness of the vacancy, occasioned by such treatment, endeavored to remedy these faults by transplanting a sound tooth from another person or animal.

Practice showed this defective, and the theorist advanced the idea of an artificial tooth, with anchorages, etc. This also proved to be unsightly, and often unsanitary. Then Theory said, remove the diseased portion only, and on the try-out this was found to leave the tooth weak and disgusting to the sight. Finally, Theory proposed to fill in the missing portion with lead, with tin, with rubber, with gold, etc.,—which experiment proved to be the ideal solution of the problem.

However, it required the practical man to determine, after all, which was the best material, the most lasting, and the most sightly and sanitary.

Innovators or theorists in this profession, as in all others, are often carried away by their own enthusiasm—they attribute too many virtues to a new method or device, and, falling short of what is claimed for it, it

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may hastily come into disrepute, while the discerning eye of practice sees its limitations and does not try to stretch its use beyond its capabilities. Again a theory of merit is conceived, but not worked out thoroughly; it is given out in an immature state, and fails. Later, the practical man, looking over the junk-heap, discerns the good material in the discard, determines its capabilities and limitations, works it over, and presents to the profession a matter of real value. It is, after all, the province of the practical man to try out and develop.

The conservative man is not disposed to make changes. What he has, in the past, used with success, he is inclined to consider good enough. He is more or less a creature of routine and habit. He must be forced to see, before he will believe, and to acknowledge fully the merits of a thing before he will try it.

On the other hand, the innovator or theorist, is frequently attracted by something new, because it is new or novel, while the fact that a thing is new and untried tends to predispose a conservative against it, but if accepted by him it is thoroughly tried out, and in the end improved upon.

The theoretical man, the innovator, is a radical and a reformer. The practical man is conservative, and conservatism is founded on a man's confession of his own limitations. Innovation is based on his determination and endeavor to remedy his defects. We are naturally innovators and theorists in the first half of our lives, but in the after half we dislike changes, and stand out for "old times, old friends, old ways."

Reform is affirmative, and progressive, while conservatism is negative.

The conservative is more ready to acknowledge merit in others, and frequently has no other excuse for not making a change than that of the trouble and time required to learn a new way. Reform is more inclined to insist upon its own merit, sometimes to the extent of making its hobbies seem to be "real horses."

The conservative is inclined to aver that present methods, etc., are good enough, and sums up his philosophy and religion in the saying, "Whatever is, is right." The reformer asserts "Whatever is, is wrong," and in his antagonism too often inclines toward asinine resistance, to egotism and self conceit, which may result in hypocrisy and reaction. The more enthusiastic theorist or reformer one is in early life, the more conservative and practical he is likely to become in the latter part.

Innovations are frequently started which over-reach, and run beyond the conception and intent of the reformer, and in the moment that he sees such to be the case (as it exceeds his wishes) in that moment he becomes a conservative.

The innovator is full of enthusiasm, which constantly prods up, and is good for the profession. He grasps and advances new ideas, and almost against their will, pushes the conservatives along, and pulls them out of the ruts they are cutting for themselves. A fault of his is that sometimes

he does not perfect a process sufficiently, and so that it is generally adaptable. He may do work, which in itself seems perfect, and which he will consider a success, even though it last but six months, but will the subject for which this work is done consider it a success? If the work is not lasting, it tends to bring the profession into disrepute with the laity, who judge of work almost wholly from the standpoint of utility and endurance, and unless the work stands up, will term the operator a quack, and perhaps will censure the entire profession.

The real value of theories, methods and innovations can be determined only by practical experiment and use. Good theory is good practice, but you cannot always tell what theory is good until tried by practice.

Some processes, and the practical adaptation of some theories, while possible to an occasional member of the profession, requires the possession of a certain knack or skill, and proficiency, that can be attained only by an expenditure of time and energy not at all commensurate with the results.

Some men made full sets of porcelain teeth, lasting, serviceable, sightly, and in fact perfect, but humanity would certainly suffer were all practitioners to resolve henceforth to make nothing but sets of full porcelain teeth, and the profession would suffer a rebuff, a set-back, and endure an odium that could not be overcome or thrown off in a generation.

Through discriminative use has come all progress. The innovator has advanced thousands of ideas, that, the practical man, as a jury, has tried out, and discarded, to find one that meets all requirements.

The theoretical man, the innovator, is a fault finder—I use the term in its good sense—he sees the faults, shortcomings and deeds of the profession, and endeavors to contrive remedies or processes therefor. His weakness lies in that he may become so enamored with his device as to attempt to apply it beyond the real scope of its practicability and adaptability.

Then, of the theorist and the practical man, the reformer and conservative, it may safely be said of these opposites each makes a good half, but neither is possible as a whole.

Hence, it is evident that the man who will be most successful—the man who by lasting, sightly and perfect work, convinces the laity of the benefits conferred by the profession—is the man who recognizes the true value and importance of new ideas and theories, is capable of separating the gold from the dross, and in his practice, gives to the world the best he has.

DISCUSSION.

Dr. W. D. Snyder: Doctor Custer's paper is certainly well written and covers the subject nicely, so far as it applies to dentistry, and in most things I agree. When I was notified by your executive committee that I had been asked to discuss the subject, "Man Theoretical and Practical," it occurred to me that the subject was a very broad one, taken in its general sense of what man had accomplished. The essayist, however,

has confined his remarks to man as a dentist, and has so thoroughly covered the ground that to generalize a little is all that seems to be left for discussion.

David, in his 8th psalm says: "What is man that thou art mindful of him?" and Job, 7-17, asks the question, "What is man that thou magnifiest him?"

Man's superiority over all other forms of animal life has been recognized all down through the ages. Thinking, reasoning, theoretical man. Man without the power of reasoning would be as a ship without either rudder or propeller,—simply drift about.

All theorists are necessarily thinking men, but all thinking men are not theorists by any means. Some men think the world owes them a living but have no theory as how to collect the debt. The essayist mixes things up a little for me in regard to theory and innovation. Whether he means one and the same individual when he refers to theorist and innovationist, I am not quite clear.

A theory is seldom a truth. In fact, it is generally opposed to truth. It may become a truth, but then it has lost its identity as a theory and is not a theory, but a truth,—a fact. So that if man would stop at theory the world would stand still. Columbus had a theory that the world could be circumnavigated. He demonstrated it or opened the way for circumnavigating it, then it was no longer a theory but a fact. Darwin's theory of the evolution of man, and Paine's theory of man's future state remain theories and will ever remain such. I am not so well pleased with the broad use the essayist makes of the word theory or theorist. Theory gives us but little after all. It's the inventive mind that gives us our good things in dentistry. The discoverer that uncovers the hidden mysteries of the electric current and enables us to do our work with so much comfort and satisfaction. Innate ideas are great factors in our profession—ideas that are inborn—seeing the need of something, goes to work and *makes* it. Makes it without being told and without a model. And then all hail to the man, who thus endowed, is broad-minded and big-hearted enough to let the less unfortunate brother in on the ground floor at a fair compensation.

Dr. G. H. Williamson: Doctor Custer, it seems to me, has thoroughly covered the ground of Man Theoretical and Practical, beginning as he did at the period when the profession transplanted a sound tooth from another person on down to the period of the Cust inlay; a period in which so many good innovations have been given to the profession that the toe of the theorist treads hard on the heels of the practical man, and makes him quicken his gait or get off the track.

Theoretically the garden of Eden was a beautiful place to live until our grandparents, Adam and Eve, your parents and mine, put things on a practical basis; but since then we have had practically nothing that seemed just right.

Now every thing the doctor said seemed just about right, but there was one thing that came to my mind that he failed to touch on, that is the dentist who is practical in the business department of his office. Theoretically we might work for any one and every one at any time and they would all line up with their money at the first of the month. But the practical man knows that to be a theory assigned to the ash heap never to be resurrected and will be as assiduous in pursuit of that which is due him as the most successful mercantile business man of his town.

We can ride a hobby so fast, so far, and so long that we will look like the hobby itself. Don't ride your hobby until he has become lean, lank and cadaverous with feathers worn from his back. Don't trot him out; ride him awhile and then neglect him if he is a good hobby; don't ride him into your neighbor's hobby, thinking you have the only hobby on the track. But ride him carefully, usefully, prudently, earnestly, thoughtfully, beneficently, ingeniously, and philanthropically.

WHAT IS THE RELATION OF DENTISTRY TO MEDICINE?*

By Dr. Charles L. Meriwether, Louisiana, Mo.

THIS seems to be a popular subject for discussion by dental magazine writers and public speakers of today, but not once too often has its importance been emphasized. However, after listening to this paper you may think this one time too often, and yet, in spite of this maybe-so, I again state the question, What is the relation of dentistry to medicine?

There was a time in the past when the relation was considered to be that of a far-off cousin. But today they are recognized as children of a common parent, and from my point of view they are parts of the same great whole. The medical practitioner and the dental practitioner have acknowledged the brotherly relation and each graciously welcomes the kindly help of the other. Dentistry does not pose as a little maiden waiting to be coddled by the medical profession as an "affinity," but steps out boldly in the front ranks of the great army of physicians and does a noble part in relieving pain and curing diseases of the oral cavity.

It is a joint relation. Are not the physician and dentist drawn together with equal interest in consultation over a case of hare lip or cleft palate? In the American Text Book of Surgery written by the most eminent physicians, on page 345, an article reads: "Fractures of the Maxilla or of the jaw will require the services of both physician and dentist." One little incident in my town will be sufficient testimony to the advisability of joint consultation and practice. A young man dislocated his jaw bone while in the throes of an epileptic fit. The physician called in failed to replace the jaw and a second physician was called who met with no better success. Then a friend of the patient suggested sending for a dentist. The late Dr. Birkhead whose office was near by and who was President of the Missouri State Dental Examining Board, was called in consultation. He almost instantly put the jaw in place with apparent ease to himself and no pain to the patient.

Dr. A. R. Solenberger, an eminent physician of Colorado, in a paper on Empyema of the Maxillary Sinus, published in the *Dental Era*, said: "Now, my experience leads me to believe that the dentist and the rhinologist stand practically in co-equal position at the open door of disease of the maxillary sinus. We know at least that some cases are purely dental and some entirely rhinological in origin, and remain so throughout the entire course, but many, especially the chronic types, have for their pathological base both dental and nasal lesions so it transpires in many cases that no kind of treatment of the antrum directed to the teeth alone will avail, and inversely no kind of nasal treatment of the sinusitis will succeed against a diseased tooth or necrotic alveolus."

Dr. G. Hudson Makuen, Professor of Defects of Speech in the Phila-

*Read before the Alumni Association of Washington University Dental Department, March 29, 1909.

delphia Polyclinic Hospital of Philadelphia, in a paper read before the Academy of Stomatology, January 22nd, 1907, and published that year in the *Dental Brief*, wrote: "I am inclined to think that the work of the dental surgeon is in some respects in closer relation to the development of speech than that of the throat, nose and ear specialist, because of the immediate relationship of the teeth, the palate and the alveola arches to actual speech production."

There is not a dentist present but knows that there are cases when the rhinologist and dentist must consult and work together as neither can operate with perfect success independent of the other. For instance take a case where there is the lack of occlusion of the teeth with adenoids. The rhinologist may use the surgeon's knife with perfect skill, but there will not be a satisfactory cure so long as the occlusion of teeth is bad, preventing the patient from closing the lips naturally or normally. Thus we see that in order that the best results may be obtained for the patient the rhinologist and dentist must operate conjointly.

Dr. Trim Houston in a paper before the Texas State Dental Association at Corsicana, in 1904, called attention to the valuable use of the dental engine when in the hands of one accustomed to its use, outside of the oral cavity. He gave as an example the dentist assisting the physician in Aural Surgery, citing the following case: "One very troublesome case which the Aurist has to deal with is abscess of the mastoid, the infection extending from the ear to the mastoid Antrum and cells. As to the causes leading up to the trouble and treatment, it is not necessary to go into details, as the dentist is only needed to make an opening in the antrum. The operation, as generally done, is to make an incision just back of the ear, down to the bone, turn back a flap, and with mallet and chisel dig down to the cavity.

This is, at best, a long drawn-out, tedious operation: requiring in some cases hours; and, of course, a general anaesthetic. It has been my good fortune to be associated with my father, Dr. B. F. Houston, and other physicians in several cases. The method of operation has been as follows:

The probable location of the antrum is determined—the side of the head is made surgically clean—an injection of cocain is made, and then with an especially made trephine, $\frac{3}{8}$ of an inch in diameter and about $\frac{1}{2}$ inch long, mounted on an ordinary screw mandrel, an incision is made down to the bone and this plug removed with a curette, using Adrenaline Chloride 1 to 1000 to control the hemorrhage.

With an ordinary spear-pointed drill, fissure burs and finally the Ottolengui reamer, a hole about the size of an ordinary lead pencil is made in a very short time, with no shock to the patient. A general anaesthetic could not be called for except in the case of a child, or a very hysterical grown person.

It is an easy matter to cite case after case where the co-operation of the dentist and physician has proved beneficial. The body, as a whole, is

composed of units so correlated that a disturbance of one produces discord in every other, thereby complicating the work of the diagnostician. For instance, among some of the diseases of the eye brought about by bad teeth are glaucoma, phlyctenular conjunctivitis and lagophthalmos. By keeping these facts in view there must develop a wide spread interest among dentists and physicians as to their mutual aid and relation.

It is no longer un-common to see dentists taking part in medical societies and to have medical men reading and discussing papers before dental meetings. Even hospitals have opened their doors and the city hospitals of Philadelphia have four dentists on their medical staff. We heartily endorse the *Dental Cosmos* of 1906, in this statement, "Whatever may be said of the past, it is not too much to affirm that today the dentist is not a man of merely mechanical skill, whose degree stands for the extracting of teeth, the insertion of fillings, and the making of artificial dentures. Progress has provided him besides with a thorough scientific knowledge; education has taught him in anatomy, the normal condition in pathology, the abnormal condition, and a study of germ life in bacteriology. This knowledge the D. M. D. and D. D. S. with the M. D. receive from the same text books in our colleges. Not only in college life, but all through their professional career they have much in common which they may profitably study together, especially in matters pertaining to diseases of the upper air passages. . .

When a student in Washington University, our grand and noble Alma Mater, I learned anatomy, materia medica and physiology with medical students under the instruction of Drs. Tupper, Senseney and Blutgett. Then dental and medical students stood side by side in lecture hall and in class examinations.

Perhaps nothing has done more to establish the close relation between the dentist and physician than the creation of dental sections in Medical Associations. In 1905 at the meeting of the Texas State Medical Association, Dr. F. E. Daniels, then president of that Association and editor of the *Texas Medical Journal*, after declaring that "Dentistry is a branch of medicine and so considered by the American Medical Association." He and others were selected to make overtures to the Dental Association to become members of the Medical Association, which resulted in committees of both associations being authorized to form at once a section of Stomatology and Oral Surgery in the Texas State Medical Association. There is a section of Stomatology in the American Medical Association and the section of Dental Surgery in the British Medical Association and the International Medical Association of America and England have given a prominent place to the dental section. The day is past when a medical program before any association is complete without a lecture or paper from a Dental Surgeon.

Truly these facts prove the close relation between the two sections of the one great whole.

PRESIDENT'S ADDRESS*

By James B. Doyle, D. D. S., Grand Rapids, Mich.

IT gives me great pleasure to be called upon to address you, and preside at this meeting of the society, as it gives me great pleasure at any time, to assist in my humble way in promoting the general good of dentistry.

The dental profession of the State of Michigan has during the past year lost two of its honored members. Since our meeting a year ago Doctors W. H. Dorrance, of Ann Arbor, and T. J. Collins, of Detroit, have closed their life's work. May their souls rest in peace! They were men who had devoted their entire lives to the good of dentistry. They were always ready and willing to lend a helping hand to those who were in need, always pulling up and never pushing down. In their lives they had done as much as any two men could possibly do to place the dental profession on the high plane which it now enjoys. The inspiration that comes to us from the lives of such men makes us realize our great possibilities for doing good, and should stimulate our desire to do more to assist and advance our brother dentists.

There has been an important movement on foot during the past year, or I might say past two years, to join all the societies in the state into one large society, with branches of this larger organization in the different parts of the state. The men who have had this work in charge have labored long and diligently and are entitled to a great deal of credit. If this movement is to be the cause or means of interesting more dentists in society work, thus causing them to be of more assistance to one another, then I say that it should be endorsed by every dentist, and recommended as a movement along the right lines.

In my opinion, we cannot have too many active dental societies, and, therefore, even though this movement of organizing a state wide society should be accomplished, there would still be no good reason why there should not be other dental societies as well. There is no class of men, professional or otherwise, in the wide world, that is so much in need of the sociability, assistance and co-operation that result from society work as do the dentists, and I think I can safely say that there is no class of men who are today doing less work along these lines. In speaking of this sociability, assistance and co-operation, I am referring to these matters as applying to ourselves, and that, not only in what pertains to our social work outside the office but more especially the matters of every day practice.

We all know instances of two men occupying offices in the same building and possibly next door to each other who yet scarcely see each other for months at a time. Maybe one has been a little more fortunate than the other in securing a larger practice but should that be any reason why any jealousy

*Read before the Southwestern Michigan Dental Society, April, 1909.

should exist? No, they should go to one another, converse, become acquainted, exchange ideas, become sociable. Each can no doubt be of some assistance to the other. One may be able to give valuable information for increasing the volume of business, while the other may be able to furnish equally valuable information as to the method of performing some difficult work, while no doubt both may mutually find their tasks lightened by the good feeling thus created.

Above all things let us avoid in our work the violation of those ethics which pertain not only to our profession, but even to the every day relations of man to man in life. Let us not slander one another, or try to depreciate one another's standing in the community, either professionally or otherwise. How many times have you heard dentists make remarks about ether practitioners, how often has the fact been brought home to you that such remarks are frequently made by dentists about one another to their patients. Such conduct should be beneath every self-respecting member of the profession. Let us not say these things about any dentist, even though it be a poor unfortunate who may have fallen by the wayside. Don't kick him down, even though he be an advertiser, for the poor fellow has enough trouble of his own. In short, if you cannot speak well of a brother dentist, say nothing. If you go into any city of ten thousand, or more, inhabitants, and call upon the dentists, you invariably find a congenial lot of men, who, taken individually, are first-rate, good square fellows to meet, but when you make inquiries as to how such and such a dentist is getting along, the answer invariably is, "O, I seldom see him, but I g-u-e-s-s he is getting along all right."

Now such conditions are deplorable. Let us have more sociability in our profession. It is true, each can do a certain amount of good standing alone, but just consider the far greater amount of good we can do when we work together. No doubt all of us have at some time or another, in our lives, gone to the circus grounds to see the animals unloaded, and the tents put up. You remember how, when the tent is spread out at first all of it lies flat upon the ground. Then the men begin first to draw it up about the center polls, and gradually it is raised higher and higher, and as it ascends each foot in the center it also gradually draws and raises up all portions even to the outermost edges. Then one by one the posts are placed in position some distance from the center, and throughout the whole operation of raising this tent we have noticed that as each part was raised higher and higher it had a like effect upon all the other parts, raising them also in a proportionate manner. So it is with the work of our members in the societies, and the relations of the societies themselves with one another. Some members of our profession must necessarily attain greater heights in their work than others. Some will go to the top; others will go nearly there, while a great many must remain in the general field of merely successful practitioners. It is an advantage to all that some attain great heights, because in just the same manner as the raising of the center of

the tent draws up all other parts even to the outermost edges, so also does the raising of one of our members to a plane of greater success and eminence in his work have a like effect on drawing up all the other members proportionately, for

In the loss or gain of one man,
All the rest have equal share.

And in the same way that we thus assist one another as individuals, and must necessarily profit indirectly by the greater advancement of others, so likewise should each of the dental societies profit by the advancement of the others. In other words, there should be no petty rivalries among members, though always a legitimate and worthy rivalry of each trying to make his work the most perfect; nor should there be a rivalry or disposition to destroy on the part of one dental society towards another. There is ample work for both or all, and if each society will honestly bend its energies at all times to the work of its own improvement and the advancement of its members, without wasting fruitless energy in questioning the doings of other societies, then all of the dental organizations throughout the state may be and will be of mutual benefit and assistance to each other, and whether intentionally doing so or not, they will be co-operating steadily in advancing the interests of each other.

If, then, my address to you today, carries with it anything in the way of suggestion, that I would wish to be borne in mind, it is that we cultivate now and always a greater spirit of harmony and sociability, and in my judgment the elements of sociability, co-operation and assistance must eventually spell a greater success for all our members and for all dental organizations.

PRESIDENT'S ADDRESS *

By C. I. Keely, D. D. S., Hamilton, Ohio

ANOTHER year has rolled around and we meet again.

According to custom, as well as the By-laws of our Society, I am expected, as your presiding officer, to read you an address of some kind, and welcome you to this, our forty-third annual meeting.

When at our last meeting you elected me your presiding officer for this year, I tried in a few words to thank you for the honor conferred upon me, but I fear I only in a measure expressed my full appreciation, and I want now to thank you again, and ask you all to assist toward making this one of the most successful meetings of our existence.

Feeling myself a very poor parliamentarian, I fear my mistakes may be many, and I ask you to bear patiently with me, for I assure you that any made will be through ignorance and not with the intention of favoring or slighting any one.

*Read before the Ohio State Dental Society, Dec., 1908.

History tells us that, in the early stage of American Dentistry the profession was peculiar, but not singular, in the fact of its strong conservatism; if a man used a method by which he could do more or better work than his neighbor, he considered it as his individual property, to be used for his benefit alone. Anything approaching an investigation was viewed with a watchful and forbidding eye. Notice the contrast today, if one in his researches and experiments makes a discovery which will be of benefit to the profession, he cannot publish it too soon, that the profession at large may also profit by it.

Dentistry was, however, a rapid growing profession; there were no laws requiring any special qualifications to practice. It was regarded as an easy money-making profession, and, in consequence, became overrun with those who did not possess the smallest share of qualifications. As early as 1817, Dr. Hayden had broached the idea of a National Convention of Dentists; dentistry at that time seemed secure and his efforts then, as well as subsequent ones, met with no success.

It was not until 1838, when the profession, looking aghast at the rapid influx into its ranks, by these charletans, who were endangering its very existence in a scientific way, seized the opportunity offered by Dr. Hayden's idea. Not until two years later in New York City, however, was the "American Society of Dental Surgeons" organized.

This was probably the first regularly organized Dental Society. This society, as well as others which followed, were short lived because of dissension among their members. It was not until 1866 that the profession of Ohio saw the necessity of a state organization, when, on May 21st, the following call was issued:

"The entire dental profession of the State of Ohio are cordially invited to meet in mass convention, in the city of Columbus, at Newton's Hall, on Tuesday and Wednesday, the 26th and 27th of June, to form a State Dental Society, and to devise and adopt such other measures as tend to elevate and advance the interests of the profession.

"Come up, Brethren, and let us have such a meeting as our profession has not yet seen! The advantages to be derived from such an organization cannot be overestimated. Other states around us are fully organized. Shall Ohio lag behind?"

This call, which resulted in the formation of this Society by the election of Dr. Geo. Watt, president; G. W. Keely and B. F. Robinson, vice-presidents; A. W. Maxwell, corresponding secretary; H. A. Smith, recording secretary, and M. Decamp, treasurer, was signed by fifty-five of the then leading dentists of the State; of these, thirty-eight did not show up at the organization, but at later meetings fifteen became members, while of the other twenty-three there is no record of their ever having attended a meeting. Of the forty-one who composed the charter members, we have three still in active membership, namely, Drs. H. A. Smith, C. R. Butler and C. H. Harroun.

Dr. Williams and Blount went abroad, where they achieved not only distinction but great success in their profession.

When I left for my home last year it was with the intention of embodying in my address a short history of this Society and its members. I soon found the time was not only too short to do justice to it, but would consume much valuable time here in its reading, so I would suggest, as we have for some time had a committee on history which seems to have been in name only, that it get busy, or a special one be appointed, to collect data and put into such form as can be preserved and added to as occasion requires.

This Society has had an enviable career and some of its members have not only added to our Dental Literature, but have brought out many scientific points of great benefit to the profession. It is only fitting that the Society should have in its archives a complete record of all these things, and in an accessible form. This will, of course, involve some expense, but I am sure our treasury can spare what is needed and that it will prove money well spent.

Our Society has grown rapidly within the last few years, and under the reorganization, which will soon be in operation, its membership should increase ten-fold. Our colleges are getting better, the requirements for graduation and practice are filling a long felt want, and we, who can look back and see the advancement made in our profession in the last thirty-five years, can well wonder what other improvements are in store for us in the future.

I know of a minister who was severely criticised because he paid more attention to the young people of his congregation than to the older members. His reply was, "Upon the young people depends the future success of the Church." Is not this true in any walk of life? Whether in the Church, in politics, in any professional life, or in general mercantile business. Many of the younger men are coming into our societies; when I say young men, I mean those just out of college. They come, realizing the benefits to be derived from society associations. I am sorry to notice that a larger part wait for an invitation and still others, feeling that their financial condition would not justify them in doing so, wait until having built up a practice and are in better condition to enjoy these associations.

It is this class of young men in whom we should all be interested. The early teachings and associations acquired are what form our characters and keep us on the right track. Being deeply interested not only in these young men, but in the future growth of our Society as well, I would propose the following plan. All who present themselves for membership with the required qualifications at the meeting immediately following their date of graduation, be admitted to active membership without the payment of the regular fee. In this way we may bring into our Society early in their professional career those who might otherwise wait for a future time and perhaps never associate themselves with their State organization. I hope

you will not think I want to reorganize the workings of this Society by my many suggestions, for I have still another. It has always been the custom of having your president's address referred to a committee to report on at some future session. Would it not be a good idea to have discussers appointed and take it up the same as other papers read before the Society?

I thought of following out this plan today, but on a second thought was afraid you might think I was presuming too much, so I merely offer it for your consideration.

I cannot close without thanking the different committees for the excellent work done. They have worked faithfully and have given us a program from which we should all profit.

THE DEDICATION OF THE NEW DENTAL BUILDING, UNIVERSITY OF MICHIGAN

WHILE the Dental Department has been occupying its new building since the opening of the University last October, it was not entirely finished and equipped so that it could be formally dedicated until this spring when the formal exercises took place May 14 and 15, 1909. They began with an invitation to the University Faculty and townspeople to inspect the building and classes at work on Thursday afternoon, May 13. The following day was given up to clinics, held on various dental subjects. Over sixty were held by skilled operators from different parts of the country, before two hundred alumni, making it a busy and intensely interesting day. All the classes, except two, were represented and many came from long distances.

The formal dedication exercises in the main amphitheater were held at half-past four. Following the dedicatory prayer, by Professor M. L. D'Ooge, President Angell gave the address on behalf of the Board of Regents, in which he reviewed the history of the Department briefly, making special mention of the men who organized and fostered the Department in its early days. He referred to the work of Dr. Ford, Dr. Taft, Dr. Watling, and Dr. Dorrance, who labored to establish the high standards which have enabled the Department from the very first to take rank with the best dental schools of the world. These men did their work in no less than three of the University's east-off buildings, and it was a matter of congratulation to everyone when at last the Department came into possession of a building designed especially for its own work.

Dr. W. H. Jackson, '76, of the first graduating class, represented the alumni in his address. He expressed the very great pleasure of the alumni in the new building and suggested that comparison with the conditions under which the first students worked was inevitable. The great advances made by the profession in thirty-four years demand a higher and broader

standard of education, and modern facilities are necessary to keep our educational institutions in a position to meet the ideals of the constantly advancing profession. Therefore, in behalf of the alumni he expressed the gratitude of the thirteen hundred graduates of the Dental Department to the Regents for the splendid building and the confidence thus manifested in the youngest of the seven departments of the University.

Dr. J. W. Lyons, of the Class of '96, as President of the Michigan State Dental Association, represented in his speech of acceptance*, the profession of the state.

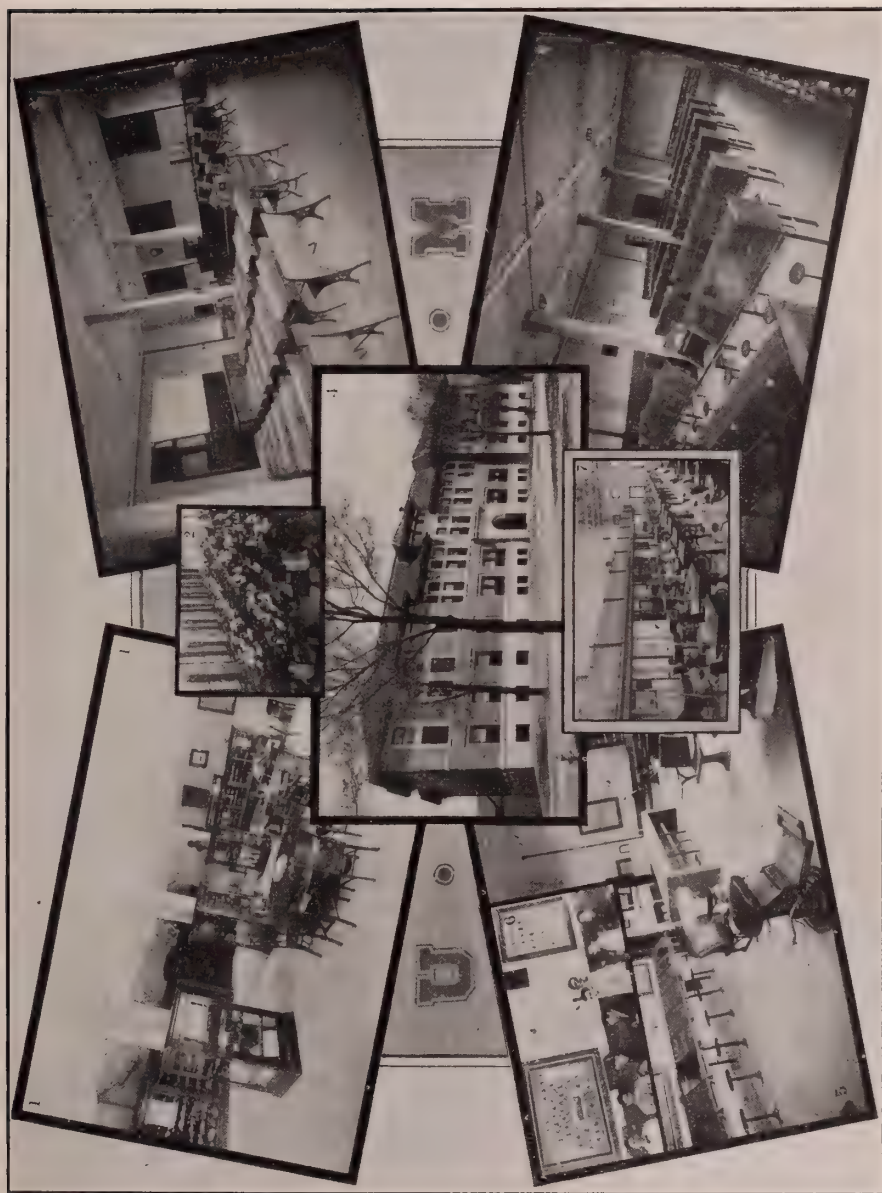
As the oldest dentist of the State, Dr. A. F. Metcalf, of Battle Creek, was present. He came to Michigan over fifty years ago and has seen the profession develop in the State during that period, and has had a large hand in its work. Due to his efforts in the State Legislature in 1873 and 1874 the bill was passed appropriating \$6,000 to meet the expense of organizing and maintaining a Dental School at the University. He carried his bill through after a strenuous campaign, and in his speech related some of the experiences which he had in his endeavors to convince legislators that there was need of a Dental College to educate men in this subject, and that the State had a duty to perform in this connection. He acknowledged, however, that he now thought that the arguments he used at that time to convince skeptical legislators were more justifiable than he had then really believed.

The formal alumni address was delivered in the evening by Dr. Harry B. Tileston, class of 1882.† Dr. Tileston is President of the Louisville College of Dentistry and Professor of Operative Dentistry. He is also President of the National Association of Dental Faculties. His address was historical, and recounted in a brief resume the rise and progress of the profession up to the present time. Because of his long official connection with the National Association of Dental Faculties he is in possession of the more important historical facts, and so utilized them as to draw out with great distinctness the causes of our rapid professional development and to prognosticate with a great degree of probability the future of professional attainment.

At half-past eight a banquet was served in the dining room of Barbour Gymnasium, and every class, except two, was toasted by some member present. Dr. C. E. Meerhoff, of the Class of 1888, acted as toastmaster, and proved the right man for the place. There were so many speakers, and so much to say that it was long past midnight when the happiest and largest gathering of the alumni of the Dental Department that, up to this time, had ever come together dispersed after an eventful day. Saturday was given over to completing the clinics of the day before, to class reunions, and to visits about the town.

* Dr. Lyons' address will be found on another page of this issue.—ED.

† Dr. Tileston's address will be found elsewhere in this issue.—ED.



MICHIGAN STATE UNIVERSITY DENTAL COLLEGE.

1—Library and Museum, 2—Clinic, 3—Lecture Room, 4—South Front of New Dental College, 5-6—Senior Laboratory, 7—Operating Room, 8—Freshman Laboratory, 9—Lecture Room.

A DESCRIPTION OF THE NEW DENTAL BUILDING.

The new building is located on North University Avenue, almost opposite the north end of East University Avenue, and next to the new Homoeopathic Hospital. It is a two story and basement building, 167 feet long by 82 feet wide. The basement is of dressed Bedford limestone and the walls above of red vitreous brick, with the Bedford stone trimmings. The roof is of red flat tile. The basement is arranged for a large student's locker and recreation room with convenient toilet accessories. Other rooms are the metallurgic laboratory, a book vault, animal room, tool room, janitor's rooms, and four store rooms for dental supply houses, as well as a large well-lighted room, 34 by 67 feet in size, which will be available, when needed for extension of the course. On the main floor are the executive offices, Faculty room, Dean's office, Secretary's office, lockers and rest room for women, a large and beautifully furnished museum and reading room, and a fireproof book vault. The scientific research laboratories, consisting of eight rooms, occupy the front part of one-half of this floor. These are well equipped for work in physics, chemistry, surgical pathology, histology and bacteriology, photography, and temperature room. On the north side of this floor are the freshman and junior technique laboratories, each 34 by 67 feet in size, equipped to accommodate 125 students in each. There adjoin each laboratory a large preparation room for the instructors and between these a technic museum room, and the accounting supply room.

On the second floor, reached by a handsome iron and marble double stairway, is a large patients' waiting room, in the center of the building. Leading from the room in one direction is a hallway to the patients' examination room, patients' coat room, toilet rooms, prosthetic clinic room, and laboratories. Another hallway leads to the large amphitheater and its ante-room, the hospital rooms, extracting room, therapeutic laboratory, X-Ray room, superintendent of clinic's private room, and patients' rest room. The whole north half of this floor is given over to the operating room, which is 34 by 165 feet in size. This is the finest lighted room ever made for its purpose. It has in addition to the large double windows in the side walls, two ceiling skylights, each ten feet wide and extending nearly the whole length of the building. The light being from the north is steady and without the glare of sunshine and is so completely reflected that there is no shadow in any part of the room. In the rear part of this room is a gallery ten feet wide and ten feet from the main floor which is used for the porcelain work. The operating room is fitted with 80 modern dental chairs.

The building is fireproof and substantially constructed and is heated from the central heating plant on the Campus. It is supplied with two large fans placed in the attic where pure air is taken in through the roof and warmed and forced into every room in the building. Separate vent pipes from these rooms carry the bad air up to the attic where it is forced out of the building. The building is lighted with electricity, and all laboratories are furnished with gas, water, etc.

ADDRESS

By J. W. Lyons, D. D. S., President of the Michigan State Dental Society, at the Dedication of the New Dental Building at Ann Arbor

Mr. President, Honorable Board of Regents, and Friends:—It gives me very great pleasure indeed to be with you here today, to take a part in this very eventful occasion in the history of this institution. To speak for the profession of this great state of Michigan is an honor of which any man may well feel proud. But in the performance of this task assigned me I feel my weakness to do it the justice it demands.

So strongly do I feel the extreme difficulty of saying anything worthy of this occasion or to this audience, that I feel that the committee who arranged this program should have been more careful in their selection.

It is now thirteen years since I graduated and took my degree from this college. I am glad I came as a student to Ann Arbor and glad I took a degree in dentistry. I am of the opinion that the laity sometimes wonder why we enjoy the practice of such a profession as dentistry. I must say that I believe it is because the Creator designed us to fill that peculiar little niche in the universe, which, had he omitted, his subjects might have assumed that life was but a bed of roses.

To minister to human need, is why we are dentists. We love our profession, and we are striving by our influence and by the application of that which is best within us to uplift and make it better, to place it just as high as it is possible in the realm of professional attainment.

As a training place for the youth to enable them to engage to advantage in the struggle of life, to fit them to hold their own in it and to build for themselves enviable reputations, I must, in all honesty, say, in looking back through the years and recalling the requirements, the methods, the advantages that the dental student had, before and up to my time as compared with those given the profession by this most honorable body today, surely brings to mind those famous lines:

“Backward, turn backward, Oh Time in thy flight,
Make me a child again, just for tonight.”

As I look about me, how glad would you all be to be boys again, students once more in “Old U. of M.” in beautiful Ann Arbor, noted as it is for its location, overlooking probably the most picturesque valley in Michigan, the Huron, with here and there a touch of nature in its extent of natural forest—these great oaks as nature grew them, and combined with this the very atmosphere laden with the refinement and culture of great educational centre.

We who have gone forth into the world and had many of our jolts and knocks, could most truly now appreciate these advantages.

It might be interesting to know that away back in 1865 this department was thought of, but nine years elapsed before anything definite was accomplished; then by the influence brought to bear by the profession of the state through their state society and the very able support of Dr. Metcalf, who

was then a member of the legislature, a bill appropriating \$6,000 was passed to establish and maintain a dental school for two years.

On May 12th, '75, the Board of Regents formally established the college with two professorships. Dr. J. Taft was made professor of Dental Medicine and Surgery and in June Dr. J. A. Watling was called to the chair of Clinical and Mechanical Dentistry and Dr. W. Jackson was appointed Demonstrator of Mechanical Dentistry. It was first housed in rooms now occupied by the Homoeopathic Medical College, then in the building now occupied by the Civil Engineers and then in the old Hospital building. The course was at first two years of three months each. In '84 it was made two years of nine months, in '89 it was made three years of nine months. Beginning the session of 1901-2 the course was made four years, but abandoned in 1904.

For many years following the birth of this school the State Dental Society took a fatherly interest in its welfare, each year appointing a University visitor whose duty it was to maintain an official interest in the welfare of the school. This ceased when the department became an integral part of the University at the time when the whole University's support was put on the basis of the mill-tax. Although the official relations of the State Society and this school have been severed, the interest of the profession is the same.

This new building with its splendid equipment demands renewed interest as well as a new responsibility on the part of the profession.

Much more should be expected from this department now than ever before, but the great obligation lies with us; this great investment will be of little value unless the profession of the state backs it up with its continued interest, its moral and professional support.

The profession of our state feel that this great school, established as it is on so favorable a basis among the great departments of learning in this famous University, will indeed place Michigan in the foremost ranks of dentistry. With this most excellent equipment I would be so pleased to see the requirement placed so high, the line of students watched so closely that if but few men were able to pass from its doors, those men would be the best men graduated in the world. Think of the character of such alumni in a few years. Michigan now has an opportunity such as few other states enjoy—to have within its borders the highest grade of professional training known. If it does not come it will be because of the lack of intelligent co-operation by the University authorities, the faculty and the profession of the state. Since it was the profession of the state that founded the department it is bound to keep in close touch with it and do its part to make it the expression of its best ideal.

The time has come when dentistry is recognized as a distinct profession.

Ever since the separation of the professions of medicine and dentistry, steps have been taken to reunite them so as to make dentistry a specialty of medicine and occupy the same basis as Rhinology or Ophthalmology.

The dental profession of America has demonstrated that this would be a retrogressive step. Those countries in which dentistry is assumed to be a branch of medicine have made but little progress in dentistry. Medical men who have made a failure of the practice of medicine have foisted themselves upon the public as qualified dentists and with almost no knowledge or training in dentistry have also made the poorest of poor dentists. Dental education is immensely concerned with the means and methods which furnish the very best advantages in order that the dental student may acquire the very best possible foundation for the practice of his chosen profession. It would be a mistake to expect the dentist to master the whole field of medicine and dentistry thus resulting in but an incomplete knowledge of either, for today dentistry means so much that a man could spend his whole life in its vast researches and yet only find he had just begun.

It has been wisely said, "The knowledge which a man can use is the only real knowledge, the only knowledge which has life and growth in it, converts itself into practical power: the rest hangs like dust about the brain, or dries like raindrops off the stones."

I challenge any profession today to show more advancement and progress in the last few years than that made by dentistry. It is simply marvellous. New methods and modes of treatment are being brought forward so rapidly that methods pursued but a year ago are antiquated today. This new equipment to this great institution of learning is only in keeping with the demands of the profession for developing bigger minds, and stimulating greater research work and promulgating the more modern principles. We are proud of the position Michigan has assumed. We are proud of the standing of our profession in America.

When this great conception of the needs in this department of learning of this great University became apparent, and the undaunted love for their profession held sway, advancement for Michigan, advancement for America, advancement for the world was uppermost in their minds; then this noble faculty were set aflame with the desire to bring this about. This is indeed a proud day for them and for us all: in this great achievement which in its glorious consummation now receives the applause of the alumni and the profession of the state.

How noble, how complete, how beautiful, how inspiring to those who are now occupying it and for the years that shall mark it hereafter! If our State and our Country as we hope may go on in the enlargement and advancement of a glorious civilization we may feel sure that if our descendants shall overtop us in intelligence, in strength, or in art, and equal us in the love of our profession, they will not say that this was not a worthy triumph for the age in which we live.

How shall we appreciate the beneficence of this great state in building this most excellent institution here in our midst, and for the thoughtfulness of their attention to us? The happy and hearty manner in which those in

charge have looked after every detail to bring about a complete and harmonious whole?

This is an age of research, of great research, in science, in history, in all branches of inquiry that throw light upon the former and present conditions that bring about the results we observe. As the years go by, the profession of the state will realize more and more that the year just passing has given every man the right to hold his head a little higher as a dentist.

I hold that throughout our profession every man who strives to be efficient, progressive, and successful, neither quality being worth anything without the other, that each of us must realize that it is for the interests of mankind to have these institutions with the highest aim supplant those with the aim of revenue only which are only a menace to our progress. It is our duty to positively discourage such schools and stand ready to support with all our power the upbuilding of such as this.

I think you can now understand that I admire the highest of high ideals and, therefore, that you will believe that I speak with sincerity when I speak of what I believe we should accomplish. In voicing the sentiments and expressions of the profession, it affords me very great pleasure in behalf of the profession of the State of Michigan to accept this institution, dedicated to the study of dentistry from this most honorable Board of Regents of this grand institution which has done so much to make the name of Michigan known and respected the world over.

THE PROGRESS OF DENTISTRY *

By H. B. Tileston, M. D., D. D. S., Louisville, Ky.

I STAND before you tonight as the humble representative of over twelve hundred graduates, men and women, who have gone out from the Dental Department of the University of Michigan during the thirty-four years of its existence, and, scattered widely over the face of the globe, are, with one accord, rejoicing, as we here are rejoicing, that our beloved college has at last come into possession of its new building. For many years the beacon light of hope has glowed and waned, and glowed again, finally to reach full fruition in this magnificent structure, and we are this night here assembled to complete the ceremonies of its dedication to a future and greater work.

Truly I am proud to be the spokesman for the great army of dental alumni of the University of Michigan upon such an occasion as this, and to be the bearer of loving congratulations from the Alumni to President Angell and the Board of Regents upon the substantial housing of a department that holds no mean place amidst the galaxy of jewels which make up

*An address delivered at Ann Arbor, Mich., upon the occasion of the dedication of the new building of The Dental Department of the University of Michigan, May 14, 1909.

this great University, and to Dean Höff and his faculty upon the realization of a hope so long cherished, and to express our wish, nay, our conviction, that the efficiency of the school as a leader in dental education will be more marked than ever before. And I am proud to be an alumnus of this institution.

When asked from what college I received my degree, I confess to a distinct sensation of satisfaction, a quite pronounced feeling of chest expansion, as I reply,—“The Dental Department of the University of Michigan at Ann Arbor.”

Many dental colleges have been organized in this country since this department was founded in 1875, and there are some that are older than this one is, and most of these schools are doing an excellent work, fully as meritorious as is being done here, but to us there is but one college, but one toward which we feel that reverence and affection that a child feels for a parent, the one that is the best of all. And this in spite of any connections we may have since formed with other colleges as teachers or officers.

To my youthful mind the little building on the other side of the campus in which I took my course, was quite an imposing structure, quite sufficient, it appeared to me, for all practical needs of dental education. And so it was then.

After many years I returned, stopping over on my way home from the national meeting at Niagara Falls in mid-summer. Naturally I at once made my way to the building in which I had studied my profession, now hemmed in by new structures amidst which it looked small and inconsequential enough, to be sure. I gazed at it in astonishment. I walked around it and examined it closely to see what had been taken away, but it appeared to be all there, deserted and empty. I then visited the “improved” quarters in the old wooden hospital building, but the place was locked and I could only get an imperfect glimpse through the high windows. And it was just as well so.

As I view this splendid new building with its modern and complete equipment, its laboratories, its operatory and lecture halls, with every facility perfect for teaching up-to-date dentistry, I am profoundly impressed with the progress dental education has made in recent years, and also with the vastly superior advantages afforded the student of today as compared with what was to be had, though deemed all that was needful, twenty-five or thirty years ago.

At that time only two terms of six months each were required to complete the course, but little more than one term of the three now required for graduation:

The equipment in those days was very simple—a mechanical laboratory with the furnishings necessary for swaging metal plates and making rubber dentures, for the first year men, and an operating clinic room for the seniors. We soldered full cases with the mouth blow-pipe, and but few seniors had dental engines.

The introduction of the technic methods of teaching by David M. Cattell, an alumnus of this college, and Thomas Weeks, less than a dozen years ago, together with the contributions of G. V. Black on cavity preparation and his studies on tooth structure and the physical properties of filling materials, as well as his wonderful systematization of technique in teaching, have worked a noted change in dental college courses of instruction and have made necessary vast additions to the college equipments to adapt them to the teachings of dentistry by these modern methods.

In the development of the technic courses no inconsiderable part was taken by our dean, N. S. Hoff.

Many additions to the dental curriculum have been made from year to year as the need became manifest, until now even three terms of nine months each scarcely affords time enough to adequately present all the subjects included in it.

The progress of dental education affords a reliable index to the progress of dentistry itself, at least during what we call strictly modern times.

Dentistry is not modern. Dental lesions are as old, at least, as civilization. Human remains that have been exhumed from the most ancient sepulchres show unmistakable evidences of the existence of all the dental diseases known today.

Dental affections were as painful and as insistent upon relief then as now, and doubtless there were those who attempted to treat them.

While history fails to record anything definite concerning the practice of dentistry at the time of the earliest Egyptian civilization, there is undoubted evidence that it was then associated with general medicine. The oldest medical manuscript known, the Ebers papyrus now in the library of the University of Leipsic, dating as far back as 3700 years before Christ, treats of the diseases of the teeth and gums and gives no less than fourteen prescriptions for the treatment of dental diseases. Herodotus states that the practice of medicine in ancient Egypt was divided into specialities, and that there were specialists in charge of the disorders of the teeth. Dental surgery, however, as we comprehend that term, is not mentioned, and statements that artificial teeth, pivot teeth and teeth filled with gold have been found in Egyptian mummies are not well authenticated.

The Greek Aesculapius, known as the father of medicine, who flourished thirteen centuries before the Christian era, is said to have also practiced dentistry.

Well authenticated specimens of prosthetic dentistry dating back farther than four hundred years before Christ, made by the Phoenicians and Etruscans, are to be seen in the Civic Museum at Corneto, Italy. The ancient Greeks and Romans have also left specimens of dental art which are on exhibition in various museums. All of which goes to prove that dentistry is not by any means modern.

During the period known as the Middle Ages, medicine and dentistry,

in common with all arts and sciences, fell into decay, and it is not until the Fifteenth century that revival is noted in the writings of Areulanus, who appears to have been the first to definitely advocate the use of gold foil in filling decayed teeth.

About this same period there flourished in France the great "barber surgeon" Ambroise Pare, known as the "father of modern surgery" and also as the "foster-father of dental surgery." He was the first, so far as known, to practice orthodontia.

But the real renaissance of dental surgery did not arrive until the time of Pierre Fauchard, the father of modern dentistry and author of a monumental work, "The Surgeon Dentist," and of whom Chapin A. Harris said, "He was one of those masters in science who appear from time to time in every department of intellectual inquiry, and whose extraordinary capacity and acuteness enable them to prepare, in the brief space of their active life, material for the full occupation of generations of ordinary men who succeed them."

Dr. Harris further says of him: "He found the dental art a crude branch of mechanics; he left it a digested and systematic branch of the curative art."

Fauchard was born in Brittany toward the close of the seventeenth century. He was trained and educated for the surgical profession but adopted the practice of dentistry because it suited his tastes and his natural mechanical ability, and because he saw in it opportunity to alleviate much human suffering which was wholly neglected by the surgeons of that time. In his writings he deplores the lack of "any public or private course of surgery in which the theory of dental maladies is amply taught, and in which one can receive fundamental instruction in this art, so essential for the healing of those maladies, and of those of the neighboring parts" —the first suggestion of a dental college.

For many years immediately following the Fauchard era no notable events mark the progress of dentistry.

There were, however, during this period, many eminent practitioners and some writers whom we are proud to refer to as the fathers of modern dentistry, men of dignity, learning and skill. In France there was M. De Chemant, the inventor of porcelain teeth, Bourdet, Delabarre, Jourdan; in England, John Hunter, Blake and Fox, and in our own country John Woofendale, Joseph Lemaire, John Greenwood, dentist to George Washington, Josiah Flagg, James Gardette, Horace H. Hayden, Edward Hudson and Leonard Koecker.

These gentlemen, together with many others of lesser note whom I have not time nor space to mention by name, kept alive an unorganized profession, and not only saved a most useful and beneficent calling from utter oblivion, but prepared the way for the momentous events soon to follow.

We come now to the year 1839, a year made notable in the annals of

dentistry by three events which were destined to have a most profound influence upon its progress as a profession.

In this year was begun the publication of the first dental journal ever issued, the "American Journal of Dental Science;" in this year the preliminary steps were taken in the organization of the first national dental association ever formed, the American Society of Dental Surgeons, and the first dental college in the world, the Baltimore College of Dental Surgery, was chartered.

Which of these agencies, since grown to such magnitude, has proven the most potent influence in the progressive development of dentistry it is difficult to determine.

The Journal goes to the cultured and the uncultured alike, its wide distribution bringing it into intimate contact with practitioners everywhere, and enabling it to wield a peculiar power for good of the greatest importance. Journalism has fulfilled its mission nobly. It has given us a literature without which dentistry could never lay claim to the dignity of a profession.

The dental association is an instrument of undoubted value in professional development, furnishing an incentive to generous interchange of knowledge and ideas, and dissipating absolutely that selfish secretiveness which formerly prompted men to keep their laboratories locked against their fellows for fear of losing some advantage over them.

True, the benefits of societies may be said to be limited to the elect, but the journals give wide circulation to their proceedings, the two together exercising a tremendous influence for advancement.

But the college is the nursery, the incubator out of which is born the vitalizing material which makes both journalism and society possible and contributes essentially to their success.

Education, in dentistry as well as in other professions, means progress, and our only hope of higher attainments as a profession is to educate, educate, educate.

To our minds, at least, there can be no question but that the college has been the most potent factor in the progress of dentistry.

For some years, owing to the provisions of the state laws regulating the practice of dentistry, the only gateway to practice in most of the states has been through the college, and it will not be long before all applicants will be required to have a diploma from a reputable college as a necessary credential before being admitted to examination by the State Boards of Dental Examiners.

As we contemplate the present high estate into which dental education has come, we think of him who, against great obstacles and in the face of discouragements, persisted in his efforts until he succeeded in founding the first dental college, and we gratefully acknowledge the debt we owe to Chapin A. Harris.

Dr. Harris' desire was to organize a dental department as an adjunct

to the medical department of the University of Maryland and made overtures to that end to the faculty, but his proposition was refused upon the ground that "the subject of dentistry was of too little consequence to justify such action."

Up to this time dentistry had been looked upon by its votaries as a branch of medicine, though not so accepted by the medical profession, and Dr. Harris naturally expected that it would be taught as a specialty of medicine. When his overtures to the medical faculty were rejected he organized the Baltimore College of Dental Surgery, and the profession of dentistry was born as a separate and distinct entity, and has grown and developed as such to the present time.

Just what might have been the outcome had dentistry been accepted at that time as a specialty of medicine it is impossible to say. Judged from the trend dental education has taken and its marvelous development, which could only have occurred as the result of a destiny foreshadowed in the founding of the Baltimore College, it was best that the two professions should have remained apart.

Dentistry is admittedly and unquestionably a department of the healing art and its pursuit involves the practice, to a limited degree, of surgery, but it cannot in any sense be considered a specialty of medicine. There are those who have contended in recent years that the degree of Doctor of Medicine should be required as a preliminary to that of Doctor of Dental Surgery, thus making dentistry a specialty of medicine, but any hope they may have cherished that such a thing will ever come to pass is doomed to disappointment. The M. D. degree is a very desirable thing for the dentist to possess, but it is almost purely ornamental. The curricula of the dental colleges now include all the fundamentals of medicine, and such subjects as pathology, materia medica, therapeutics, hygiene and physical diagnosis, and if these are taught as they should be and the student takes advantage of his opportunities, he will have all the knowledge of medicine that is needful in the legitimate practice of his profession, without having to spend an additional three years to acquire the M. D. degree.

One who is engaged in the handling of even a moderately successful practice will find that dentistry is quite sufficient to occupy all his time, and exacting enough, in its conscientious pursuit, to call forth all the genius and skill he may possess.

So rapid and marvelous has been the progress of dentistry in the last half century, that it is not surprising that the impression has been generally entertained that the origin of the profession dates within this period. So great has been the development of the various elements that enter into it or have grown out of it, that it has become necessary, in large cities at least, to divide its practice into specialties.

The history of dentistry in recent times is replete with the names of men who have not only illuminated their own profession, but in some

instances have contributed to the sum total of knowledge in other branches of learning.

Horace Wells discovered anaesthesia in 1849 and thereby conferred a boon upon both dental and general surgery and a benefaction upon humanity with hardly a parallel.

The late Professor W. D. Miller, of Berlin, our most distinguished alumnus, who was to have been the dean of the Ann Arbor college, demonstrated with scientific accuracy rarely equalled in bacteriological research, the germ theory of the etiology of dental caries, and was a brilliant contributor to dental literature. Dr. Miller's investigations have been still further elucidated and added to by Drs. Leon Williams and Goadby, of London, and Dr. G. V. Black, of Chicago.

The studies of the saliva in its relation to oral and systemic diseases by Dr. Michaels, of Paris, have attracted world-wide attention, as have also the investigations along the same lines by several dentists in this country, notably Dr. F. W. Low, of Buffalo, and Dr. J. Morgan Howe, of New York City.

In oral surgery the name of the late Jas. E. Garretson is especially prominent and that of Truman W. Brophy, the originator of an operation for cleft palate which he has performed in many cities both in America and Europe.

And so the list might be extended indefinitely of the men who, in all departments of dental art and science, have helped to place dentistry upon a high plane and have aided materially in its onward progress.

Of journalists, authors and teachers dentistry furnishes a long list of those who have become eminent, a roster too long to attempt to enumerate. But there is one name in this connection we must think of and recall with reverence, that of the late Jonathan Taft. For many years the Dean and Professor of Operative Dentistry of the Dental Department of the University of Michigan, he found time to edit a dental journal, to contribute largely to the periodical literature of the time, to write a text book, to conduct a practice and to take an active part in the councils of his confreres, both collegiate and professional. He was one of the most widely known and one of the best loved and respected men in the dental profession. Of the alumni of this institution a large majority sat under his instruction and in the midst of our rejoicing on this occasion, let us pause to offer to the memory of Prof. Taft a tribute of love, reverence and respect, for to us he was as a father, ever mindful of our welfare, a gentleman and kind.

We have traced, imperfectly and rather hastily, though the story has been long in spite of attempts at brevity, the progress of dentistry through many years of its development, and we see it today in its high estate, the peer of any of the learned professions and pre-eminent in its tangible and definite benefactions to humanity.

It has become a necessity, indispensable. It contributes inestimably to

the comfort, the health, the adornment and the longevity of the race, and its opportunities for service to humanity are unlimited.

I would speak briefly of the future of dentistry, for already I have occupied perhaps too much time.

It is always hazardous to attempt to prophecy. But already we stand in the shadow of coming events and it is not difficult to discern some of them. I have referred to the medical and dental professions as being separate and distinct, but their common aims and purposes must inevitably bring them closer together. Such a tendency has been apparent for some time, in fact, in a large measure has been realized and the time is near when dentists and physicians, more particularly certain specialists of medical science, will cordially co-operate and consult with each other freely in their mutual ministrations for the relief of suffering humanity.

The future will see advancing professional and educational standards and higher preliminary educational requirements, a larger and more scientific literature, the establishment of dental libraries of reference, a broader and more comprehensive and efficient national organization which will embrace state and local societies, and altogether a general uplift in social and professional dignity.

There are two lines of activities which open before us and invite the future endeavor of the dental profession with ever increasing insistence. The first is preventive dentistry.

Since the remarkable development and revelations of bacteriology have opened the eyes of the medical profession to the value of preventive medicine, dentistry also has begun to realize the importance of prophylaxis for the prevention of dental lesions. Much has already been accomplished along this line of practice, but the future will see more and more of it, and more scientifically applied. In a paper recently read before the Institute of Stomatology of New York City, Dr. J. Morgan Howe says: "Dentists can in no other way deserve and receive the gratitude of mankind so surely as by a deliberate and persistent effort to solve the problem for the prevention of dental destruction." Practical immunity to dental caries, pyorrhœa alveolaris and other oral diseases is not a Utopian dream.

The second great demand upon the future activities of the dental profession is the care of the teeth of the poor, a greater and more philanthropic concern for the health of the mouths, and that means more than is commonly realized, the general health of the entire bodies, of those who are unable to employ the services of a dentist and who, in many instances, are ignorant of the importance of such service. Some efforts have been made to supply this need, scattered and sporadic in their nature, very few of which have been successful or become permanent.

The dental profession cannot support so vast a charitable work alone; it requires the sympathy and financial support of communities.

It is the duty incumbent upon the dental profession to labor incessantly to the end that public sentiment shall be aroused, and the future will see

the establishment of dental infirmaries and free clinics for the care of the teeth of the poor, at the expense of the municipal treasuries.

In an address delivered before the Law Department of the University of Michigan in February of last year, on the occasion of the observance of Washington's birthday, Governor Charles E. Hughes, of New York, uttered these words, with which I may appropriately close my address:

"The professional ideal is an ideal of service. It is an ideal that calls for hard work. It is an ideal which involves devotion to the public good and service to the community as the highest duty and the most important privilege. Through your efforts and the efforts of others who are inspired by this ideal, we may look with confidence to the future."

CAP AND DOWEL AS A CROWN BASE

Celia Rich, Nashville, Tenn.

I should like to offer a suggestion for making a cap and dowel as a base for a crown. After loosely fitting the iridio-platinum or pure platinum pin to the canal, solder to it a piece of gold plate somewhat smaller than the root end, at such a point that when the pin is placed in the prepared canal, the plate of gold will slightly stand off from the end of the root.

Now roughen the pin, run your casting wax over both pin and gold, and press the whole into position. The piece of plate holds the wax in shape, preventing any displacement in removing it from the root, and the result is a closely fitting pin and cap.

This method will be found of especial advantage in cases where two pins are used, for obvious reasons.—*Dental Cosmos*.

MAKING GOLD OR PLATINUM MATRICES QUICKLY AND WITHOUT PUNCTURE

E. S. Gaylord, New Haven, Conn.

Use a medium weight China silk, instead of goldbeaters' skin, suggested by Dr. Emil Schreier, of Vienna, as a cradle support of gold or platinum matrices for inlays. The silk is an improvement on vellum, as it has greater bulk and better sustains the foil. The procedure is the following: The foil is cut sufficiently large to amply cover the prepared cavity, placed between a fold of silk, then dipped into water, and, with wet pellets of cotton, bibulous paper, or spunk, is quickly carried to the floor of the cavity, and swaged to form without fear or puncture. It is then taken from the cavity, the silk is carefully removed, and the matrix returned for completion by again swaging with pellets of cotton, bibulous paper, or spunk, but this time used dry, then completing the operation by filling with wax or gum camphor for safe removal.—*Dental Cosmos*.

PRACTICAL SUGGESTIONS

PORCELAIN INLAY TIPS FOR THE INCISOR TEETH

By Frank How, Toronto, Ont.

I HAVE based my classification for tonight, roughly dividing them into three classes.

First—The thin, labial lingually speaking, type of tooth—for which I advocate an all porcelain inlay.

Second—The medium type—with a platinum post inlay.

Third—The thick type—with a combination of porcelain and gold inlay.

It is my purpose now, gentlemen, to take up each of these cases separately, but before doing so, I would like to remind you of an old porcelain rule to the effect that “the strength of porcelain is in due proportion to its bulk.” This rule must be kept in mind during the rest of the paper.

THIN TYPE TOOTH.

We now come down to the insertion of an inlay in a tooth of the thin type. On account of the thinness of the tooth the inlay must necessarily be very thin also, too thin to permit of the safe attachment of any additional aid for retention. Consequently, we must depend entirely on the cavity preparation for the retention of the inlay. So much has been written on this question of cavity preparation that I shall only state that a flat base, parallel walls and sharp angles are absolutely necessary to secure a satisfactory result. The rest must be left to the personal judgment of the operator. There is one point, however, I might mention before leaving this topic, and that is the inadvisability of trusting to an external step as an aid for retention. By an external step I mean the extension of the cavity into the surrounding tooth tissue, either laterally or gingivally, such as is used in a Johnson special cavity for a gold filling, where the groove is carried across the incisal edge and terminated in a pit on the opposite side. This method works well with gold, but not with porcelain, on account of the great friability of that material. The risk of fracturing the inlay at the sharp angle is too great, and the percentage of satisfactory results too small to make it a safe practice, especially so in the case of a thin tooth, such as we are now considering.

There is room for discussion in this thin tooth case, gentlemen, in regard to the advisability or not of leaving the proximal ridges, or ridge, as the case may be, of the tooth intact, when they are in good condition. We often have a case presented where the central portion only of the tooth is

defective, while the enamel on the proximal ridges is in a perfectly normal condition. The question now arises, shall we leave these ridges projecting down to the incisal edge, or shall we cut them off on a line with the gingival margin of the cavity? The advantage of the latter method is that it will facilitate the color question and reduce the likelihood of detection. By so doing we shall have only one straight line extending from one side of the tooth right across to the other, while on the other hand, by leaving the ridges intact we shall have three lines—or if a semi-circular line is used we shall still have the inlay surrounded on three sides instead of one by tooth tissue. From the esthetic standpoint the former method is undoubtedly the preferable, especially when we remember that the color of the enamel in a thin tooth is usually of a markedly different color at the tip than at the more marginal portion of the tooth. On the other hand we have equally strong reasons for leaving the ridges intact. The advantages of so doing are from the standpoint of retention. The lingual side of the tooth—the side where the stress of mastication falls—is more or less concave, the body of the tooth terminating on the proximal sides in strong bulging ridges of enamel between which the inlay rests. It will readily be seen that these two ridges are going to be subjected to a greater strain in mastication than the central portion, thus reducing chances of dislodgment of the inlay. Which method to follow is a matter of choice, but personally, I much prefer the latter method—that of leaving the lateral ridges intact.

There is one more point in regard to this thin tooth case that I would like to mention, and that is the advantages gained by having either the labial or the lingual wall of the cavity at a higher altitude than the other. The chief advantage in so doing is that we change the line of cleavage from the straight plane to the oblique, thus greatly increasing the power of resistance from dislodgment. For example, if we wish to break a piece of wire we score it on each side at directly opposite points, then give it a quick twist and the wire breaks, but if the grooves do not correspond the wire would only bend. This principle ought just as surely to apply to the cement. Other advantages in having a difference in the altitude of the walls are that if the labial wall of the cavity is of greater length than the lingual it will act as a direct mechanical support to the inlay—the direction of the force in mastication being upward and outward. Again, the longer the labial wall the less will be the amount of porcelain exposed to view, and hence the less conspicuous will the inlay be. On the other hand, if the lingual wall is the greater the less force will fall on the inlay and the more on the tooth, thus reducing the chances of dislodgment.

Keeping these points in view we now prepare the cavity till ready for burnishing the matrix. As all present are experienced men and have their own method of burnishing the matrix I shall not go into the detail of the technique very minutely, merely mentioning a few points that I have found helpful. The use of gum camphor and a strip of rubber dam facilitates

this operation very much. After roughly burnishing and trimming the matrix place it in position in the cavity. Then cut a small piece of rubber dam about one-half inch wide and three inches long, hold one end of this firmly against the lingual side of the tooth with the first finger of the left hand, then insert into the matrix some gum camphor and slightly burnish, after which bring the other end of the dam over the incisal edge and up into the labial side of the tooth, holding this end with the thumb of the same hand. By stretching the dam tightly you remove the possibility of any movement of the matrix while burnishing, and at the same time stretch the dam so thin that you can readily see all that you are doing underneath. Complete the burnishing till sure of a perfect matrix and then remove it from the cavity. After burning out the camphor flow the porcelain into the matrix, taking care to keep the margins perfectly free. Dry out the porcelain and score it freely, then bake in the usual way. After the first bake reburnish the matrix to the cavity, remove and complete the inlay in the ordinary manner. When completed tear off the platinum and bake Land's Media on to the cavity side of the inlay. I have found this material of considerable help in retaining the inlay to the cavity and can safely recommend its use.

TOOTH OF MEDIUM TYPE.

In cases of this kind we have sufficient body of tooth to obtain porcelain of sufficient bulk to permit of the safe introduction of foreign material as an aid for retention in securing the inlay. Our aim here is to obtain a perfectly safe retention without affecting the translucency or color of the inlay and with as little sacrifice of the tooth tissue or porcelain as possible.

There are several methods of procedure, but the one I have found to best comply with our object is the use of platinum pins obtained from old porcelain teeth. The preparation of the cavity is practically the same as in the first case, with the exception that near each end of the cavity small parallel pits are sunk into the dentine for the reception of the posts. Care must be taken not to have these pits too near the pulp, for notwithstanding the fact that the metal pins will be surrounded by cement, they are very liable to conduct all thermal changes to so close a proximity of the pulp that disastrous results will follow. On the other hand, if the pits are sunk too near the proximal walls they will weaken the same very materially. Consequently, a little judgment must be used in the selection of the locality. The mouth of the pit should be enlarged to secure greater bulk of porcelain for the head of the pin. After securing the pins from the old tooth, file and cut off, according to the length you desire the pins, the head on one end of the pin—this end is to be inserted into the pit, while the other is to be baked into the porcelain. Now, gentlemen, before proceeding any further, fit these pins into the pits and make sure that they slip in and out with absolutely no friction. If they do not readily do so, polish them with a cuttle fish disk and soap stone the cavity thoroughly. Perfect ease must be secured in this respect or trouble will arise later on. Having obtained

perfect ease of insertion and withdrawal, remove the pins and burnish the matrix as in the former case. In so doing you will puncture it over the entrance of the pits. Remove the matrix, burn out the camphor and replace in the cavity. Then insert the pins through the platinum into the pits, leaving a sufficient portion of the pins extending above the floor of the cavity to insure its solid retention in the porcelain. Now mix some porcelain body to a thin consistency, introduce it into the matrix and carefully work it around the head of the pins. Do not be afraid of using too much body, but on the contrary fill the cavity up completely and pack the porcelain down firmly. Then dry the porcelain by absorbing as much of the moisture as possible from it by means of a small finger napkin or piece of blotting paper. The next move is to trim out the excess porcelain so as to leave the margin of the matrix exposed. By the application of hot air the remaining moisture is then driven out of the porcelain and the matrix will be ready to remove from the cavity. Care must be used in taking it out or the pins may not come with it, but if each detail in the technique as above described is carefully carried out there should be no inconvenience of this kind. The porcelain in the matrix is now baked and the matrix reburnished. After which the inlay is finished in the usual way and cemented in the tooth, we then have an inlay which it will be impossible to dislodge without fracture of the porcelain. There will be no opaqueness of the porcelain or change in its color, due to the metal on account of the minimum amount of platinum in the porcelain, and the inlay itself will certainly be strong enough to withstand the average amount of strain to which it will be subjected.

THICK TYPE TOOTH.

The cavity preparation here differs very materially from the foregoing cases, consisting, in fact, of two separate and distinct methods in the same cavity. The posterior portion of the cavity must be prepared according to the requirements of a gold inlay-beveled margin, etc., etc. Several methods of retention may be used depending on the case. The method I have used in the model is similar to that of the last case presented, i. e., with pins, but many other forms may be used to advantage. The anterior position of the cavity is prepared in accordance to the rules for a porcelain inlay.

The cavity being prepared and carefully soap-stoned, build up the deficient portion of the tooth with inlay wax; contour and trim the lingual portion of the wax to suit the occlusion and other requirements of the case. The labial portion of the wax is then cut out in such a way that the porcelain inlay when completed will slip into the gold inlay and be secured there beyond any possibility of dislodgment. This is accomplished by means of grooves or dovetails in the gold, so arranged that the matrix can be withdrawn without disturbing it. In cases of very close occlusion—end to end bite—it is advisable to extend the gold slightly over the incisal edges so as to insure all the force of mastication falling on the gold. In cases of this

kind the question of retention becomes a very minor consideration as we practically convert the cavity into a labial, instead of an incisal one, as far as the porcelain inlay is concerned.

Having the wax prepared as desired, remove and complete the gold inlay. It is then cemented into the cavity and left till the cement has thoroughly set. The matrix for the porcelain inlay is then burnished to the cavity, the lingual wall of which is, of course, composed of the gold inlay. The porcelain inlay is completed and cemented into place.

We now have an inlay which it is practically impossible to dislodge or break. The strain of mastication falls entirely on the gold, protecting the porcelain both from fracture and dislodgment. The chief disadvantage of the method is the partial loss of translucency of the porcelain, the inlay possessing the same opaqueness as a Richmond crown. It must be remembered, however, that most cases of this kind of combination inlay will be inserted in cuspid teeth where the light strikes them at an angle, and consequently any little defect in color will escape the notice.

This form of inlay, gentlemen, has its place in porcelain work. It may be suitable for only a small percentage of cases, but the same may be said, more or less, for almost all phases of this kind of work. No one method will answer all cases.

This, gentlemen, concludes my remarks on porcelain inlay tips for incisors, which I hope may prove to be some small help to some of the present company.—*Dental Practice*.

SEPARATING FLUID FOR IMPRESSIONS

Lucian H. Arnold, Chicago, Ill.

To a strong, boiling solution of borax add shellac scales till the liquid becomes very dark in color, boiling and stirring constantly till the shellac is all dissolved. It makes a muddy looking solution which is, however, a good chemical solution of very dark red color. In using this solution it is not necessary to wait for the impression to dry, but on taking it from the mouth it is rinsed, dried and given a thin coating of the fluid, allowed to stand one or two minutes—long enough to mix the plaster for the model—and the model poured at once, thus allowing no time for the impression to become distorted. When separated the model will be found to have a very desirable glossy surface.—*Dental Review*.

RE-ADAPTING ILL-FITTING DENTURES

By T. P. McNulty, Gouverneur, N. Y.

If the denture be not entirely satisfactory, a new impression is obtained and a model made.

The case is then placed on the model and any defects noted. The denture is heated, and while soft is adapted to the model and plunged into water.—*Dental Cosmos*.

EDITORIAL

WHY?

SCARCELY a month passes without at least one death recorded from the use of chloroform as an anesthetic for the extraction of teeth. In comparison with other general anesthetics it has for years been considered the most dangerous, particularly for this use, and it seems strange that the dentist of today will tolerate its administration in his office.

With the knowledge of its dangers, why will a dentist persist in allowing it to be used in his tooth extraction operations? The patient's life is at stake and the dentist's reputation.

Why should the dentist not dictate to the physician what he should or should not use in the dentist's office instead of allowing the physician to make the choice?

And here it might be well to warn the dentist against the use of chloroform after the use of cocaine. Many deaths recorded in medical circles from this practice show that it is extremely dangerous. But why use chloroform at all when there are other effective anesthetics that can be employed with far less risk?

DENTAL FORCEPS IN ANTIQUITY

DR. SUDHOFF recently read a paper before the Leipzig Medical Society on "Dental Forceps in Antiquity." He said that even before the time of Hippocrates references to the use of such instruments are found, but no specimens are met with among the surgical instruments belonging to classical times that have been discovered. Unlike the mass of other Graeco-Roman surgical instruments, which were nearly all of bronze, the dental forceps of antiquity must have been made of iron or steel, although no medical writer mentions the fact.

In the Aristotelian "Mechanical Problems," however, there is a passage which, according to Dr. Sudhoff, has hitherto been overlooked, in which it is mentioned as a familiar fact that dental forceps were made of iron. In the Museum of Hamburg, where there is an almost unrivaled collection of iron implements, there have been found two steel plated dental forceps, one for the upper, the other for the lower jaw.

That dental forceps should have formed part of the ornamentarium of a military surgeon in a remote outpost, shows in what common use the instrument was.

SOCIETY ANNOUNCEMENTS

DENTAL ASSOCIATIONS THAT MEET IN AUGUST

Fifth International Dental Congress, Berlin, Germany, August 23d to 28th.

National Association of Dental Examiners, Old Point Comfort, Va., three days, August 2d to 4th.

National Association of Dental Faculties, Old Point Comfort, Va., three days, August 2d to 4th.

NORTHERN ILLINOIS DENTAL SOCIETY

The twenty-second annual meeting of the Northern Illinois Dental Society will convene at Elgin, October 20-21, 1909. An interesting and instructive program is anticipated. A banquet will be served to all members in full membership; guests extra.

FREDERIC H. BOWERS, *Secretary*, Freeport, Ill.

NORTHEASTERN DENTAL ASSOCIATION

The fifteenth annual meeting of the Northeastern Dental Association will be held in the Churchill House, Angell street, Providence, R. I., on the 7th, 8th and 9th of October, 1909. The officers and committees intend this to be a very interesting and instructive meeting.

E. O. KINSMAN, *Secretary*, Cambridge, Mass.

An exhibit and clinic of The Dental Manufacturers' Club will be held at Massey Hall, Toronto, September 7th, 8th and 9th. Being held at the time of the Canadian National Exhibition there will be reduced fares by all Transportation Companies from all points to Toronto.

It will pay all dentists to visit the exhibition and see the clinics.

NEWS AND OPINIONS

Fruits Revive Tired Muscles.

The effect of invert sugars of fruits in reviving tired muscles is a great deal better understood than it was a few years ago. Cane sugar must act in the same way, though more slowly. The invert sugars most commonly found in fruits are glucose (grape sugar) and levulose (fruit sugar). It is because the invert sugars do not require as much "making over" in the intestinal tract that they may be used more rapidly for the repair of muscular fatigue.

Grapes and some sweet cherries have been found to contain as much as 15 per cent of invert sugar. Apples, gooseberries, raspberries and strawberries usually contain 7 to 8 per cent of invert sugar. Some of the larger, early apricots, on the other hand, contain as low as 2 per cent of this substance. For the relief of muscular fatigue the foregoing fruits, with the exception of apricots, are highly suitable.

Cane sugar also is usually found, though in varying quantities, in fruits. In the sour lemon this form of sugar does not usually reach above 1 per cent. In bananas cane sugar is present to the extent of about 11 per cent. In some kinds of plums the cane sugar content goes as high as 14 per cent.

Naturally, it is in the dried fruits that sugar is found in greater quantities. As high as 32 per cent of invert sugar has been found in prunes; in English currants, 54 per cent; in raisins, 61; in figs, 48; in dates, 66 per cent.—*H. Irving Hancock in Good Housekeeping.*

Numerous Inventions By a Dentist

Three hundred inventions, ranging from an automatic horse feeder to a patent wig frame, have been evolved from the ingenious brain of Dr. Addison R. Barrett, a dentist now residing at Rockport, Me. Documents to which the government has duly affixed its seal and ribbon testify to the fact that five of the inventions have received the patent office diploma, but the others have never gone beyond the realms of the author's pencil and pad.

A woman of Hartford City, Ind., is reported sick and beyond hope of recovery, from tuberculosis of the jaw bone. Her sickness was started in a peculiar manner. Six months ago a tooth was bothering her greatly and she had it extracted. Instead of healing, the jaw bone became diseased and began to decay, and doctors diagnosed the ailment as tuberculosis of the bone.

How to Masticate Properly.

Mr. E. L. Arnott, an enthusiastic advocate of "Fletcherism," the science of food mastication, has written some greatly condensed instructions which he entitles, "How to Learn Fletcherism," as follows:

Do not take more than one-fourth to one-half teaspoonful of food into the mouth at one time, especially the first week or two.

Do not take any more food into the mouth until this has been swallowed.

Chew the food industriously.

Some Fletcherites take about two motions of the jaw per second.

All particles of food should be broken up and reduced to a liquid or liquefied form.

Do not swallow the food until it loses its original taste.

Do not try to swallow at all; just keep chewing the food and enjoying it until it disappears by involuntary swallowing or by "swallowing itself."

If you do not have time to chew your food properly it is better to eat a smaller amount or not to eat at all until you do have sufficient time.

The last taste of the food is the best.

The habits of a life-time cannot be changed in a day; you must have perseverance and determination if you wish to succeed.—*Physical Culture.*

The multi-millionaire is not *per se* a healthy development in this country. If his fortune rests on a basis of wrongdoing, he is a far more dangerous criminal than any of the ordinary types of criminals can possibly be. If his fortune is the result of great service rendered, well and good; he deserves respect and reward for such service—although we must remember to pay our homage to the service itself, and not to the fortune which is the mere reward of the service; but when his fortune is passed on to some one else, who has not rendered the service, then the Nation should impose a heavily graded progressive inheritance tax, a singularly wise and unobjectionable kind of tax. It would be a particularly good thing if the tax bore heaviest on absentees.—*Theodore Roosevelt in the Outlook.*

Gertrude E. Curtis, a colored girl of Bradford, Pa., who graduated from the high school in that town nine years ago, is now a full-fledged dentist. The *Philadelphia Record* says that she is believed to be the first colored girl to become a dentist in the east.

How to Cure Rheumatism.

To cure rheumatism it is necessary to rid the system of the excess of uric acid; and to do this a proper diet is even more important than the use of drugs, though in very severe cases the latter are not to be despised in conjunction with the dieting that is absolutely essential.

The Massachusetts General Hospital of Boston allows the following diet for its rheumatic patients: Graham or brown bread, white bread (limited to one-half slice daily), corn, granum, rice, milk, eggs, flour, puddings, crackers, beans, peas (all kinds of vegetables except potatoes, tomatoes and asparagus), rhubarb, fresh fish, butter, cheese, buttermilk, cream, alkaline waters and toast. Avoid: Red meats, starch or potatoes, white bread and sugars.

The sensible use of water, both internally and externally, plays a large part in the prevention or cure of rheumatism. One or two glasses, either hot or cold, taken before breakfast every morning is excellent to start the organs of digestion for the day, and at least one glass should be taken between meals. Often the plain water will be enough to move a slightly constipated person, but, if not, a mild medicated water may be taken instead. It is very essential to keep the bowels open in cases of rheumatism.

Uric acid in the system is a poison, and it must not be forgotten that poisonous waste matter is also eliminated through the skin. The pores of the skin must be kept freely open and not allowed to become clogged, if we hope to obtain the best results with rheumatic cases. A hot bath at bedtime is often very helpful.—*The Delineator for August.*

Dental and Surgical Supplies

Consul-General George E. Anderson, of Rio de Janeiro, reports as follows concerning the trade in dental and surgical instruments and supplies in Brazil and the conditions under which the trade is conducted:

While there was a decrease in the imports of dental and surgical instruments and apparatus into Brazil in 1908 in keeping with the general decrease in imports for that year, there was a large increase in dental and surgical supplies, due to a great extent to government purchases for the hospitals.

In instruments and apparatus about three-fourths the total decrease was at the expense of the United States, while more than all the increase in supplies was in favor of the United States. The general trade has been with Europe in surgical instruments and with the United States in dental instruments and apparatus, and the

trade in supplies and accessories has generally followed that in instruments and apparatus. The use of American dental instruments and apparatus, as well as supplies and accessories, in Brazil, depends not only upon their general high merit, which is universally admitted, but upon the favor in which American dentistry in general is held, due to the dominance of American practitioners.

The Igorrotes Teeth

Dr. Louis Ottofy, of Manila, speaking of teeth, said the Igorrotes had better teeth than dental science had imagined could be found anywhere.

"The reason for this is apparently that the Igorrotes are the most primitive, barbarian, uncivilized, and non-Christian individuals now included in the jurisdiction of the United States," continued Dr. Ottofy. "Unlike many existing examples of primitive man, they are primitive without having become degenerate. They live in the most inaccessible region of Northern Luzon, where they long ago acquired fame as warriors and head hunters, defied Spain, and managed to keep pretty much to themselves until the American occupation.

"Since then they have been studied ethnologically and otherwise. But they are still as uncivilized as ever, and there is neither a white man nor Filipino living in Bontoc. Contrary to the report of careless historians, the Igorrote leaves his teeth as nature provides them. It is the Negrito who goes in for the social grace of artificially pointed teeth."

George Lincoln Walton, M. D., has just completed an important series of three papers, entitled "Those Nerves," for *Lippincott's Magazine*. In them he discusses various phases of nervous disorders, real and imaginary. The papers will bear the sub-titles "The Human Sensitive-Plant," "Sidetractibility," and "Character-Leakage," the first of which will be found in the July number. Dr. Walton's unique and helpful little book, "Why Worry?" has gone through several editions and proved a boon to thousands of readers.

Correct principles of ethics are exemplified in the man who, while demanding for himself a complete, well rounded life, does so without interfering with the right of all other men to a similar life. But this condition is passive only. The active practices of an ethical life demand that we shall not alone refrain from interference with others in obtaining those things that make for the complete life, but should give to others such aid as may be consistent with our own complete living.

Care of the Teeth

To the Editor of the *Herald*:

Your notice of my short letter in today's issue regarding the care of children's teeth is appreciated.

Could you and your untold number of readers know, as I do, what is the most advanced topic regarding the constructive process of teeth before they appear in form this would awaken an interest that has little been considered by the laity or even the dentist.

This subject is taking shape in the minds of a few of our thinking practitioners, but as yet scarcely any literature has appeared to set on foot the agitation.

DR. G. ALDER MILLS.

New York, July 2, 1909.

Dentists and Anæsthetics

The council of the Royal College of Surgeons has decided upon the recommendation of the College Board of Examiners in dental surgery, that all candidates for the license in dental surgery of the college who enter at a recognized dental hospital on or after October 1 next shall be required to produce a certificate of having attended a course of practical instruction in the administration of such anæsthetics as are in common use in dental surgery.

Dr. J. B. Vedder, a dentist of Akron, O., has fallen heir to \$40,000, willed to him by his aunt, Mrs. J. C. Van Rensselaer, of Portland, Ore. Vedder has been located in Akron for some time and says his newly found fortune will not take him away.

The St. Louis Society of Dental Science was entertained by Dr. and Mrs. Adam Flickinger with a dinner, June 22. Towards the close of the evening a paper on "Silicates" was read by Doctor Flickinger to the members of the society.

Dr. George B. Welch has presented to the Commissioners his resignation as a member of the board of dental examiners. To take effect immediately. The resignation has been accepted, the Commissioners expressing regret.

A lady died in a dentist's chair at Arthur, Ill., June 18, following the administering of chloroform and after ten teeth had been extracted.

Dr. M. H. Knapp, a Saginaw, Mich., dentist, died July 6 of injuries sustained July 1, when he was struck by an automobile.

The W. W. Bennett Co., East End, Pittsburg, Pa., is making a memorandum case with renewable tablets, that is nearer the ideal for the dentist than anything we have seen. The sheets are 7x3¼, and the case is provided with a pocket for the reception of notes, etc. It is just the thing for use at conventions and meetings. Is thin, occupying little space in the pocket, and is very convenient. It is sent subject to examination and approval. Just write them about it.

The Cleveland Dental Society has petitioned the school board of that city for permission to establish dental clinics in the public schools. An examination by 40 members of the society of 3,000 pupils has revealed that 90 per cent of them have decayed or decaying teeth. The showing, the health officer of the city says, makes imperative the establishment of clinics.

South Dakota Dental Society elected the following officers. President, Fred Brown, Sioux Falls; vice president, H. H. Gabel, Pierre; secretary-treasurer, E. J. Schnadit, Mennoa; members of executive committee, H. M. Isenberg, Pierre; E. H. Wilson, Miller; librarian, D. St. Davies, Woonsocket. W. M. McDonald was elected state chairman of oral hygiene in the public schools and E. H. Wilson and A. L. Revell of Elk Point, were recommended as members of the state board.

Southern California Dental Society elected the following officers: Dr. George A. White, of Santa Barbara, president; Dr. D. Cave, Los Angeles, first vice president; Dr. Edgar B. Buell, of Escondido, second vice president; Dr. C. E. Rice, secretary; Dr. James D. McCoy, treasurer.

North Carolina Dental Society elected the following officers: J. C. Watkins, Winston, president; Dr. W. T. Smith, Wilmington, first vice president; Dr. L. L. Dameron, Newbern, second vice president; Dr. Arthur Fleming, Louisbury, secretary; Dr. R. M. Morrow, Burlington, treasurer.

Indiana Dental Society elected the following officers: H. C. Sexton, of Shelbyville, president, and C. D. Lucas, of Indianapolis, vice president; Otto U. King, of Huntington, secretary, and C. R. Redmond, of Peru, treasurer.

Dr. Southall Dickson of Bolivar, has been appointed by the Governor as a member of the State Board of Dental Examiners. He is a well known member of the profession who stands high throughout the state.

Deaths.

June 3—Dr. Daniel S. Chase, Medford, Mass., of pneumonia, aged 90 years, formerly of Augusta, Ga.

June 10—Dr. W. W. McCallum, Milwaukee, Wis., of heart trouble, aged 51 years.

June 15—Dr. C. Thomas, Des Moines, Ia., aged 72 years.

June 19—Dr. Ralph Shelton, Los Angeles, Cal., aged 82 years.

June 29—Dr. Warren Bradford, Spencer, W. Va., aged 22 years.

July 2—Dr. Archibald Cunningham, Detroit, Mich., aged 57 years.

July 2—Dr. S. H. Spaulding, Vergennes, Vt., of heart failure, aged 30 years.

July 3—Dr. M. H. Knapp, Saginaw, Mich., aged 68 years.

July 4—Dr. B. S. Scott, North Yakima, Wasu., of heart failure, aged 56 years.

July 6—Dr. Daniel Siddall, The Dalles, Ore., aged 77 years.

July 9—Dr. Harry P. Chase, Exeter, N. H., aged 38 years.

Marriages.

June 9—Dr. Wesley H. Pritchard, Newark Valley, N. Y., and Miss Dorothy Gibbs, Philadelphia, Pa.

June 10—Dr. Frank J. Corrigan, New London, Ct., and Miss Charlotte V. Mason, Hartford, Ct.

June 20—Dr. A. E. Woods, Rolla, Mo., and Miss Richards, of Rolla, Mo.

June 29—Dr. Eugene A. Clark, Homestead, Pa., and Miss Anna L. Ebner, of Braddock, Pa.

July 1—Dr. William L. P. Lawton, Reno, Nev., and Miss Roxie A. Bither, Nevada.

July 6—Dr. John H. Hollihan, New Bedford, Mass., and Miss Edna H. Lefevre, Baltimore, Md.

July 7—Dr. E. C. Borley, Minneapolis, Minn., and Miss Edith Grigg, Grand Rapids, Mich.

June 1—Dr. R. H. W. Strang, Bridgeport, Conn., was married to Miss Mary E. Dunlap, of the same city.

Robberies.

June 2—Dr. Anderson, Tomah, Wis., \$40 worth of gold.

June 7—Dr. Geo. P. Marion, Nashua, N. H., gold, silver and bridgework, valued at \$135.

June 8—Dr. C. G. Olson Minneapolis, Minn., teeth and fillings worth several hundred dollars.

June 10—Dr. J. V. McKee, Madison, Wis., about \$50 worth of gold and other dental material and \$50 worth of finished crowns and fillings.

June 13—Dr. V. L. Hunter, Brooklyn, N. Y., gold valued at \$35.

June 15—Dr. P. A. Pyper, Pontiac, Ill., \$7 worth of gold filling.

June 15—Dr. A. Gattin, Minneapolis, Minn., gold fillings worth \$15.

June 17—Dentists of Garden City, Kan., loss several hundred dollars.

June 20—Dr. C. A. Hintz, Springfield, Minn., gold and silver worth \$100.

June 20—Dr. R. M. Weaver, Springfield, Minn., gold worth \$25.

June 20—Dr. J. W. Toye, Marion, Ind., \$60.00.

June 21—Dr. Owen Woolley, Long Branch, N. J., gold valued at \$75.

June 21—Dr. E. W. G. Mihleis, New Ulm, Minn., \$40 worth of gold.

June 23—Dr. Coulter, Mankato, Minn., \$30 worth of gold.

June 24—Dr. Julian Harris, New York, surgical instruments and jewelry valued at \$1000.

June 25—Dr. A. J. Meatty, Oklahoma City, Okla., \$300 worth of gold.

June—Four dentists of Racine, Wis., gold valued at \$50.

July 2—Drs. J. C. and L. M. Nugent, Altoona, Pa., gold and platinum valued at \$75.

July 6—Dr. Vaughn, Columbus, Pa., gold valued at \$50.

July 6—Dr. Arthur F. Switzer, Kankakee, Ill., \$40 worth of gold.

July 6—Dr. G. D. Williams, Lexington, Ky., rolled gold and dental instruments valued at \$500.

July 7—Drs. H. E. Crumbaker and Frank B. Evans, Altoona, Pa., gold scrap and fillings valued at \$50.

The Book-Keeper (Business Man's Pub. Co., Detroit) is the most interesting business magazine that reaches our desk. There is a lack of that stereotyped fakeology that spoils much of the good such magazines might otherwise accomplish, and that is so plainly apparent in other publications of the kind to men who have had real experience in the world of affairs.

Human activities in new directions, or new developments of men and methods always possess a peculiar interest for busy men who are doing real things in the world. *World's Work* (New York) devotes its pages to the recording of such activities in the world of men, and should have a place on the library table of every member of the most progressive profession on earth.

Governor Gillett has appointed W. H. McBean state dental surgeon, an office that was created by the last legislature.

College Men Are Needed.

"College men with brains who are willing to work are at a premium in the business world today," declared Charles S. Bird, the well known manufacturer, addressing the members of Harvard Dental Alumni Association on the value of a college education to a business man.

"The supply of college men is less today than the demand. Thirty years ago the college graduate was not in demand for business. Today the earning capacity of a man is measured by the mental discipline acquired in a college course.

"The man of a liberal education is of more worth in business than the man of technical education. He will not be as useful for a year or two, but he brings with him the asset of hard, clear thinking, not narrowed by any special subject, but a mind able to focus itself upon a broad field. College today is as necessary for business success as it has been for success in law and medicine."

Dean Smith of the Harvard Dental School made an important announcement of the establishment of a chair of dental research, made possible by a recent endowment of \$10,000 in memory of Joseph Warren Smith of the class of 1901. He stated that the new dental school, which it is expected will be ready for occupancy in the fall, will be the finest equipped institution of its kind in the world.

Professor William H. Potter stated that a dental clinic for the treatment of the mouth would soon be established at the North End House.

Merging of Dental Colleges.

The Pennsylvania College of Dental Surgery will be merged in the fall with the Dental Department of the University of Pennsylvania. It is one of Philadelphia's oldest educational institutions. Dental schools all over the world have been established by the graduates of the college. The alumni association of the University Dental School will admit to membership accredited alumni of the Pennsylvania College of Dental Surgery.

First Boy—"Your father must be an awfully mean man. Him a shoemaker and making you wear those old boots."

Second Boy—"He's nothing to your father. Him a dentist, and your baby's got only one tooth."

New Mexico Dental Society elected the following officers: Dr. E. J. Alger, of Albuquerque, was chosen president; Dr. C. M. Rathbun and Dr. L. E. Ervin, vice presidents, and Dr. C. A. Eller of Albuquerque, secretary and treasurer.

The Unregistered Dentist in Maine.

In response to a request from L. S. Chilcott, D. D. S., of Bangor, president of the Board of Dental Examiners, of Attorney General Philbrook, for an opinion as to what extent persons who have not been registered in accordance with the dental examiners, are permitted to practice, the attorney general handed down the opinion, his letter to Dr. Chilcott being in part, as follows:

"Considering the dental registration act of this state in a general way, in the light of what I have already called to your attention, I feel quite safe in advising you that an unregistered man should not be allowed in this state to operate in any way upon a patient by way of practicing dentistry if he were to receive directly or indirectly as a result of his work any reward, fee or emolument whatever. You will observe that none of the cases to which I have called your attention seem to forbid an assistant from doing laboratory work or making himself generally useful about an office providing that he is not operating on a patient and receiving pay therefor either directly or indirectly and I confess that I fail to see anything in the Maine registration act which would render a person liable for conduct of this kind."

Dental Examinations.

California—117 applicants; 63 successful.

Idaho—20 applicants; 16 successful.

Indiana—75 applicants; 68 successful.
Rhode Island—21 applicants; 15 successful.

South Carolina—24 applicants; 20 successful.

Massachusetts Dental Society elected the following officers. President, Dr. Cornelius S. Hurlbut, of Springfield; first vice president, Dr. Eugene H. Smith, of Boston; second vice president, Dr. Carl R. Lindstrom, of Boston; secretary, Dr. Charles R. Rodgers, of Dorchester; assistant secretary, Dr. Edson Abbott, of Franklin; treasurer, Dr. Joseph T. Paul, of Boston.

Georgia Dental Society elected the following officers: President, Dr. W. C. Miller, of Augusta; first vice president, Dr. Geo. S. Tigner, Atlanta; second vice president, Dr. Holmes Mason, Macon; corresponding secretary, Dr. D. L. Hill, Atlanta; recording secretary, B. H. McNeil, Athens.

Gov. Glasscock, of West Virginia, June 28, reappointed Dr. W. A. Williams, of Huntington, a member of the State Dental Board for a term of four years.

Ohio's Oldest Dentist Honored.

Toledo boasts the oldest practicing dentist in Ohio, and his name is Chester H. Harroun, D. D. S., who celebrated his eightieth birthday on July 17th. He has been in the continuous practice of his profession for sixty years.

In celebration of his birthday, some of the members of the Toledo Dental Association escorted Dr. Harroun to the steamer Arawanna, and then to the Yacht Club, where a complimentary dinner was tendered him and he was made the recipient of a handsome silk umbrella. Mrs. Harroun also was remembered, being presented with a beautiful silk bag containing twenty silver dollars.

The presentation speech was made by Dr. L. T. Canfield, who stands next to Dr. Harroun in seniority among Toledo dentists. Dr. Canfield said:

Mr. President, Ladies and Members of the Toledo Dental Society: I do not know why I should have been selected for this occasion, unless it be because of my being the next oldest practitioner in Toledo. However, it is a most pleasant and yet sad occasion; pleasant, because we are here to celebrate and commemorate the eightieth birthday of one whom we all love and revere, Chester H. Harroun, born July 17, 5 p. m., 1829. Sad because we realize that soon we must lose the companionship of one who has been with us from the beginning of our professional career, always ready and willing to say a kind word, extend a kind and helping hand, and give us the best he had, of which he has been well equipped from an experience of sixty years at the dental chair. During these sixty years Dr. Harroun has, without doubt, given to the advancement and elevation of the dental profession as much time, energy and brains as any man in the state, helping to form the several state societies and many of the other states. He has seen the birth and death of the society known as "The Toledo Dental Society" many times, until today it is the great grandchild of its former self. To the young man of the profession of today Dr. Harroun should stand a living example, kind and manly yet firm and loving in character, standing erect, vigorous and healthy, with a firm and steady hand capable of doing a delicate operation today at eighty years of age. Who of us will be able to exemplify him?

There are no honors nor attentions that come to one in this life that he appreciates more and remembers longer, than those that come to him from the friends of his young manhood, and his more mature years, from those before whom he had gone out, and in whom hope with its struggles and perplexities meant much to him.

We who have known you through the years that are gone, when you battled manfully for a higher place in the profession of your choice, but as well for a higher and more scientific plane for dentistry, have gathered here on this, your eightieth natal day, to express in this simple way the high regard we have for you as a dentist and a citizen. No mere words or gifts, no matter how beautifully spoken or costly, can express the high regard we entertain for you. You have always stood for all that was true and noble in manhood and the inspiration your example has been to others has told mightily for good in the community, nor will it soon be forgotten or lost. From this exalted view you can look back in bright vision upon a life crowned with splendid memories and with a hope that has ended in fruition. But my Dear Doctor, you could not have reached this memorable position in life unaided and alone. She, who on the morning of your young manhood, when the bright rays of hope were painting beautiful golden fancies on the canvas of your future, you selected from among all God's millions to be your companion and helpmeet, has been more than wife to you. Faithfully and loyally has she stood by you in all life's tragedies. She has encouraged you when encouragement was necessary and rejoiced with you when success crowned your efforts. Her gentle loving devotion has been an inspiration to you. Hand in hand you have traveled life's highway together, and tonight in its eventide, you are still happy in the thought that you are both together in the golden sunset of a well spent life.

With these few words it is my pleasure, in behalf of the Toledo Dental Society, of which you have been a faithful and honored member, to present to you and your good wife these small tokens as sentiments of our love and esteem.

Illinois State Dental Society.

At the forty-fifth annual meeting of the Illinois State Dental Society held in Danville, May 11-14, 1909, the following officers were elected: President, E. H. Allen, Freeport; vice president, C. C. Corbett, Edwardsville; secretary, J. F. F. Waltz, Decatur; treasurer, C. P. Pruyne, Chicago; librarian, H. F. Lotz, Joliet.

The forty-sixth annual meeting will be held in Springfield, May 10-13, 1910.

J. F. F. Waltz, Secretary.

Michigan Dental Society elected the following officers: President, Dr. George H. Copp, Plainwell; vice president, William A. Griffin, Detroit; secretary, Don M. Graham, Detroit; treasurer, J. Ward House, Grand Rapids.

Stringent Regulations Governing Practice of Dentistry in England.

Consul John L. Griffiths, of Liverpool, in the following report defines the conditions under which an American dentist may practice his profession in England:

Before anyone is allowed to use the name of dentist or dental surgeon in England he has to pass an examination and be duly registered. He has the option of taking one of four examinations, the Royal College of Surgeons in London, Edinburgh, Glasgow, or Dublin. The register roll is kept in London by the General Medical Council. The said council will accept as a sufficient qualification for registration, in addition to the examinations before referred to, a reputable university examination in dental surgery in any of the English colonies. Any English or colonial properly qualified medical practitioner may register as a dentist before the General Medical Council, London. American degrees are not accepted as a basis for registration.

The length of time necessary for an American to qualify in England depends somewhat on the standing in this country (if he is a dental graduate in the United States) of the university which conferred the degree upon him. It would be well to write to the registrars of each of the examining bodies at London, Edinburgh, Glasgow, and Dublin, giving full description of qualifications and experience, and stating also from which dental college the degree was obtained. It is said that the character of the examination varies, and the inquirer would have the opportunity of selecting the examining board which he might prefer. Residence in any particular city in the United Kingdom is not necessary; as, for example, one could live in London and take the examination for either Ireland or Scotland.

The Dental Register is made up of those who were in practice in the United Kingdom before 1878 and of those who have qualified themselves to practice since that year. There are at the present time about 4,700 registered dentists in the United Kingdom. In addition, there are from 10,000 to 12,000 practitioners who have not passed the examination, are not registered and are not permitted to use in any form the name dentist or dental surgeon.

The dentist act of 1878 provides a penalty of £20 (\$97.33) in the form of a fine for any person using the name or title of dentist or of dental practitioner, or any name, title, addition, or description implying that he is registered under the dentist act, or that he is a person specially qualified to practice dentistry unless he is registered under this act. The only exception

is in the case of legally qualified medical practitioners. It is further provided in said act that a person who is not duly registered, or who is not a legally qualified medical practitioner, shall not be entitled to recover any fee or charge in any court for the performance of any dental operation or for any dental attendance or advice.

American dentists are extremely popular in England because of the thoroughness of their work and their use of the most modern methods, and the field should be an inviting one for a dentist who is fully qualified. He should be able to wait for two or three years for a clientele, as he would have first to pass the examination and be duly registered, and then it would take some time before he could establish an acquaintance that would permit him to demonstrate the quality of his work.—

Consular Reports.

Dentistry In Spain

Vice-Consul-Gen. William Dawson, Jr., reports that a dental college has recently been added to the University of Madrid, whose graduates will have the right to practice in Spain without further examination. There are 87 practicing dentists in Barcelona, several of whom were educated in the United States, and the methods are up to date.

Pennsylvania State Dental Society elected the following officers: President, W. D. DeLong, of Reading; first vice president, C. C. Walker, of Williamsport; second vice president, W. H. Funderberg, of Pittsburg; recording secretary, L. M. Weaver, of Philadelphia; corresponding secretary, J. H. Crawford, of Pittsburg; treasurer, W. L. Spencer, of Carbondale.

Maine Dental Society elected the following officers: President, Frank H. Mead, D.D.S., of Bangor; vice president, Ellery P. Blanchard, D.D.S., of Portland; secretary, Irving E. Pendleton, D.M.D., of Lewiston; treasurer, E. J. Roberts D.D.S., of Augusta.

Southwestern Virginia Dental Society elected the following officers: President, J. V. Haller, Wytheville; first vice president, R. P. Copenhaver, Tazewell; second vice president, J. G. Crockett, Pulaski; secretary and treasurer, C. A. Newland, Wytheville.

Minnesota Dental Society elected the following officers: President, Dr. F. S. Yaeger, St. Paul; vice president, Dr. W. A. Moore, St. Paul; secretary, F. E. Cobb, Minneapolis; treasurer, Dr. C. H. Robinson, Wabasha.

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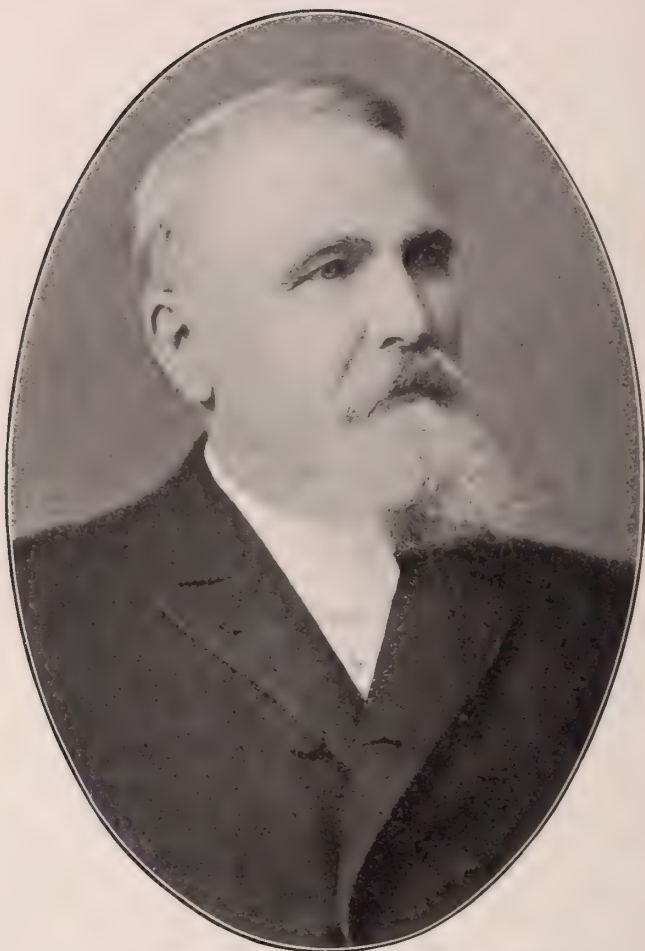
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To Correspondents: Send communications, exchanges, books for review, etc., intended for the Editor of Dental Summary, to Dr. L. P. Bethel, 1255 Neil Ave., Columbus, Ohio. Subscriptions and advertisements, send to the publishers.

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DR. FREDERICK SHIVELY WHITSLAR.

Pioneer dentist, who died at his home in Youngstown, Ohio,
August 7, 1909.

THE DENTAL SUMMARY

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The Ohio State Dental Society
The Michigan State Dental Society
The Indiana State Dental Society
The Kentucky State Dental Society
The Louisiana State Dental Society

The Virginia State Dental Society
The Northern Ohio Dental Society
The Eastern Indiana Dental Society
The Southwestern Michigan Dental Society
Odontological Society of Western Pennsylvania

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NERVOUSNESS AND INSANITY CAUSED BY PAINLESS DENTAL DISEASE*

By Henry S. Upson, M. D., Cleveland, O.

Professor of Neurology in the Western Reserve Medical School, Cleveland, Ohio

THE GREAT founder of Taoism said twenty-five centuries ago "The spiritual and the material, though we call them by different names, are one and the same."

Modern psychology has in many ways diverged widely from Oriental methods, but this saying of the great Chinese philosopher may still find fresh illustrations.

The object of the present paper is to put on record a few observations made during the past two years in a broad and important field, that relating to dental diseases in connection with nerve strain and with the psychoses, melancholia, mania, and dementia precox.

Although typical cases may occur in which a diagnosis of one member of this nervous and mental group is warranted, in many patients the symptoms blend in such a way that no sharp dividing line can be drawn. Most of the mental cases are nervous, most nervous cases have a mental substratum.

*Read before the Northern Ohio Dental Association, June, 1909.

On the physical side there is an equal complexity of conditions. Diseases of the oral, abdominal or pelvic viscera are present as an exciting cause in conditions of insomnia, simple depression, purely emotional excitement, and in the more severe degrees of emotional disorder with or without delusions, so that what are considered normal emotions verge by imperceptible gradations into the severest cases of emotional and mental disorder. The physiologic and the pathologic are one. To sift these cases and determine whether some or all of them are in their mental symptoms dependent on underlying physical conditions, it is necessary to proceed from the simple to the complex.

One of the simplest dental lesions is impaction. When a tooth is formed in the jaw bone with its axis wrongly directed, it is often prevented by impact against another tooth from appearing outside the bone or through the gum. The result is pressure against the peridental membrane, in some instances accompanied by severe toothache or neuralgia. In most cases no such pain is present.

It has long been known that irregular teeth are common in the insane and among habitual criminals. It is a notable fact that never so far as I have been able to discover has a single experiment been put on record to establish or disprove a causal connection between impacted teeth and the nervous and mental diseases in which they are so common, with the exception of the cases reported by me in June of last year.

Beginning with the known fact that an impacted tooth is not only a stigma, but a lesion, capable of causing agonizing pain, and the further fact that long-continued intense pain may cause delirium and insanity, in fact that most pains are associated with consequent mental phenomena, experiment and observation must determine whether these severe nervous, mental and moral symptoms are due to the pain, or may occur in the absence of pain.

Impaction is not considered by dentists a common lesion. It has never been looked for systematically by skiagraph in any class of the community, so that statistics on the subject are quite lacking. In undertaking this investigation two years and a half ago, four patients seen in private practice suffering from insomnia and melancholia recovered promptly after the relief of dental lesions. Skiagraphic examination was then made of patients in three of the state hospitals, and a large proportion of cases of impaction found among patients suffering from the psychoses. These cases were most of them of long duration, many of the patients were more or less demented, and the results of interference by extraction have thus far not been favorable in patients in the Cleveland and Columbus State Hospitals. These patients will be made the subject of a later report. Material in private practice is more hopeful, consisting in large part of recent cases with some mild cases of long duration.

Selecting patients whose illness has begun in the adolescent period,

from 15 to 30 years of age, and a definite clear-cut lesion, true dental impaction, the terms of the problem are simple, for several reasons. In the first place because much nervousness and most functional insanities begin during this decade and a half. Then, too, these young patients are less likely than are older ones to have complicating diseases in the abdominal or pelvic viscera. Lastly, an impacted tooth is a lesion readily diagnosed if carefully sought, and its removal is harmless if skillfully done. Our first subject then will be dental impaction causing adolescent insanity.

Mental aberrations in youth have been classified by alienists in many complicated ways, and their study is a travail and confusion of spirit. So far as treatment is concerned it is not much more necessary to divide the youthful insane into clinical groups, than to classify typhoid cases according to their delirium, or to group drunkards according to the symptoms of their drunkenness. The division into melancholia, mania and dementia precox means simply that cases mainly characterized by mental depression are said to have melancholia, those with elation, mania; and those who present a variety of the other emotional and mental symptoms, stubbornness, talkativeness, mutism, states of trance, rigidities, and physical and moral anesthesia, all these are classed together as cases of dementia precox, a name which simply means that some of the patients become early demented.

The following case is one of insomnia with simple melancholy, a type which in varying degrees is one of the commonest among the nervous and mild mental illnesses treated by the neurologist and the general practitioner. These cases of melancholia are due to various causes. Many of them are set up by abdominal difficulties, of stomach, liver or kidneys. Even more of them are caused by pelvic disorders in women. The common attribute of all the exciting causes is that they are irritative in character. The case now to be described is one due to the pure irritation of an impacted tooth.

The patient, a manufacturer forty years of age, was always robust until four or five years ago. Then he began to be occasionally somewhat sleepless and depressed, especially when he was very tired. Two years ago depression became extreme and sleeplessness persistent and annoying. At times, however, his depression was replaced by undue elation and energy, and these were also attended by insomnia. All of these conditions have been improved at times by rest and made worse by work and worry. He has had no headache, no neuralgia and no toothache except from an occasional ulcerated tooth, relieved by incision and letting out of pus.

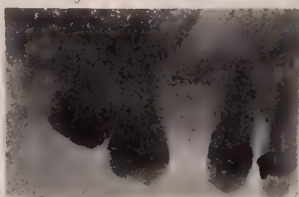
He has had three molar teeth extracted in the last four years on account of abscess at the roots. On skiagraphic examination the left upper third molar tooth was found impacted against the roots of the second molar high in the jaw bone. (Fig. I). The right upper second molar was dead but showed no evidence of abscess. Both of these teeth were extracted October 16, 1908. The roots of the left second molar tooth were found partly absorbed by pressure of the third molar. The patient has made a progressive recovery since the operation. Sleep was better two nights afterward and the



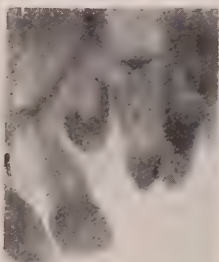
I. Case 1 Simple Melancholy



II. Case 2 Melancholia



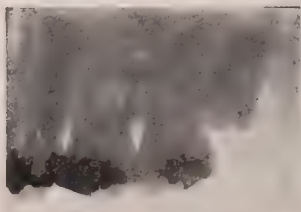
III. Case 3 Dementia Praecox



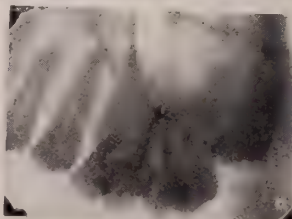
IV. Case 4 Dementia Praecox



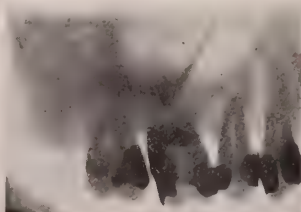
V. Case 4 Dementia Praecox



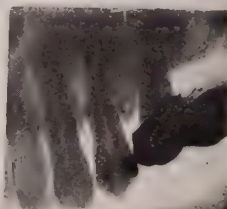
VI. Case 5 Neurasthenia



VII. Case 6 Neurasthenia



VIII. Case 7 Melancholia



IX. Case 7 Melancholia

general health improved markedly as the patient obtained more sleep. The depression has disappeared and the patient has made a practical return to health.

The preceding is an instance of moderate insomnia, and, with varying conditions of life, a remittent case of simple melancholia. It may be compared with a case of severe delusional and suicidal melancholia reported by me in June of last year. The patient was a teacher twenty-seven years old. When first seen she had been profoundly melancholy for a year. She had had persistent insomnia, many delusions such as that her mind was entirely gone, that she had never been quite sane and that she had committed various dreadful sins. Treatment by tonics, suggestion, and change of scene, and treatment of the uterus proved of no avail. After a year of useless effort the teeth, which were apparently in perfectly normal condition, were examined by skiagraph. An impacted upper third molar tooth was found and removed under anesthesia in February, 1907. (Fig. II). The patient had never in her life had a toothache or any indication of disease in the teeth or jaws. She began to sleep well within a week or ten days after the extraction of the tooth. I unfortunately have no letters from her relatives in regard to her condition before the operation. The following letter, however, written about two weeks after the operation, when her condition had improved somewhat but not much, will give an adequate idea of her sufferings for the preceding two years. Under date of February 19, 1907, her aunt writes: "My niece is very melancholy. If we try to rouse her from that she moans and groans and takes on over that hobby of hers. She says when she shuts her eyes she sees those horrible looking images. She calls them the evil one and they are after her. It seems sometimes her mind is trying to grasp something she cannot reach. She says her head is bound. She makes a great effort to break away from the evil one (as she calls it). As she is not able to she gets discouraged and settles down into a terrible melancholy. We take her riding and walking and try every way we can to get her mind from herself. We have to watch her all the time. She threatens so much to destroy herself. She says she doesn't want to die, but in these desperate spells she may do some dreadful thing. I rub her head on the top and bathe it. She sleeps three and four hours in a night. I have given the sleep capsules two times since I came from the hospital. The outward application seems to relieve somewhat." Under date of March 28, 1907, the aunt writes that her niece "seems quite well. If she could get over that terrible idea she would be all right. She sleeps well nights, but through the day she is haunted with that one idea. We try to keep her mind on other things, but for all we can do at times it will overcome her." Her return to mental health was steady, and was typical in the fact that the delusions persisted longer than the melancholia. In such patients it is practically invariable that the emotional health is recovered first and that the delusions are got rid of later. In this patient, as the only physical disease was the impacted tooth, the other viscera throughout being healthy,

there was an excellent basis of bodily health to build on. Her recovery has been correspondingly complete. Under date of May 8, 1909, she writes: "I am very happy to be able to give you a good report of myself. You may be surprised to learn that I have been teaching school since last September. I am somewhat tired now, of course, but during that time I have missed only a few days on account of bronchitis. My school is one of the hardest in the city, I am told. It consists of the fifth and sixth grades, numbering about forty pupils who are mainly backward and undesirable children. They require a vast amount of patience and untiring devotion. My friends at home are quite surprised at my enduring power, my brother having given me, when I undertook the work, two months in which to break down. Fresh air, exercise, careful eating, plenty of sleep, freedom from worry and a passionate love for my work are the only nerve tonics I am taking."

A case very different in type is the following: A man 41 years old. He was well as a boy and until he was twenty-four. Then he began to have periods of sleeplessness at intervals of six months or a year. After a few nights without sleep he would become flighty and irresponsible. He had some periods of catalepsy and at times ran away from the institutions in which he was being treated. During the intervals when he had a fair amount of sleep his mental condition was better, but he was far from normal, being irritable and of a not happy disposition.

In this case an impacted upper third molar tooth was found only moderately angled against the second molar. It had appeared through the gum and had a large filling. The angle was apparent only by skiagraphic examination, the whole constituting what I venture to call a low angle impaction. (Fig. III). The third molar was extracted in January, 1908. The patient at that time had had several months of insomnia, but began to sleep better and to feel quieter within two or three days after the operation. The gain was progressive for several months and the patient has since been in a thoroughly normal condition. He not only sleeps well without sedatives of any kind, but has lost his undue irritability and other accompanying symptoms. The above case is quite different from the preceding cases of melancholia, and is of the type known as dementia precox. It is, however, partially remittent in course in marked contrast with a case reported last June, of which the following is a brief account.

The patient was a girl 19 years of age, and when seen in October, 1907, had for eight months drifted gradually into a condition of mental aberration. The irritability of the preceding case was in this girl replaced by an active and persistent obstinacy. She was so restless that she had to be restrained night and day. She resisted all attempts to control her, her delusions were expressed more and more actively until, when seen, her talk was most of it an incoherent muttering. She moaned continually as if in distress, but denied any pain whatever. She was obstinately sleepless night after night. The symptoms in this case were

those of dementia precox of the most severe and continuous type, and loss of sleep, refusal to eat and constant activity day and night had brought her into a miserable condition of pallor and emaciation. In this patient it was impossible to make an examination of the teeth without an anesthetic. During two months of waiting for spontaneous improvement the patient remained in the same condition, and was then taken to the Lakeside Hospital and etherized. Skiagraphs were made and an impacted cuspid tooth and all four third molar teeth were found impacted and removed. (Figs. IV, V). Improvement began in this patient within two weeks after the operation. She began to sleep better and then began to gain steadily in weight and color. With this there were longer times of quiet and the patient began to talk a little more rationally. Two or three months after the operation, during a digestive disturbance, the patient went through a period of loud shrieking, which began early in the morning after waking and these attacks were continued for five or six weeks. Improvement, however, was practically continuous and mental health was established within six or eight months after the operation. The patient is fully rational at present, but has occasional severe headaches. She enjoys a fair amount of sleep, in spite of an occasional sleepless night. In her case the left lower first molar tooth was dead, the roots were not filled to the ends and the filling was rough and overhanging. No recent skiagraphs have been taken, so that it is not certain that there may not be other dental difficulties at this time.

The preceding cases are all instances of mental disturbance. Even severe dental irritation, however, does not always result in insanity, but sometimes cause nervous symptoms or disturbances of visceral action. The two following are such cases: as they occur in father and son, they show one way of heredity in nervous and mental troubles.

The father, a man fifty-one years of age, when a child of thirteen or fourteen, began to show nervousness by biting his nails. However, he continued in fair health, until, at the age of twenty-six or seven, his digestion began to suffer. He had so-called nervous dyspepsia in a severe form, followed by prolapse and dilation of the stomach, and has had a good deal of digestive trouble ever since. Skiagraphic examination something over a year ago, revealed a right upper third molar tooth impacted at a high angle. (Fig. VI). Its removal was followed by the prompt disappearance of a very annoying feeling of distress and tension in the head, which had been present for many years. This feeling was described not as a pain, but as a maddening indefinite pressure, which caused restlessness and strong impulsion to escape from an indefinite something. Relief has been complete for something more than a year.

The nervous manifestations in the son's case go back a good deal further. He has had twitching of the face and extremities, so-called habit spasms, since he was about four years old. He has been otherwise fairly well, although not robust. Six months ago, at the age of seventeen, he had for some months been considerably worse, the twitching was more marked

and digestion and circulation had begun to fail perceptibly. Restlessness was extreme, but no organic disease could be found anywhere in the body. Skiagraphic examination showed an impacted right upper third molar tooth almost identical in appearance with the one in the case of the patient's father. (Fig. VII). In addition both lower third molar teeth were impacted at a high angle, and the left upper third molar tooth was retained high in the jaw, slightly, if at all, angled. The third molar teeth were removed December 28th, 1908. Not enough time has elapsed for complete recovery, but the patient is at present convalescent. He is fairly well, working hard and much less nervous.

That painless disease, other than impaction, may cause disastrous results, I can now illustrate by only one example. The patient, a woman 37 years old, had, when seen in January, 1908, always been well until three or four years before that time. She then began to have a curious feeling in her throat when she swallowed, but without pain. This feeling has been sometimes better and sometimes worse; for several years she has been much depressed. She worries about her health and about other things, and has at times been sleepless. She has had no toothache and no headache, but had one attack of facial neuralgia, which stopped after treatment of the diseased roots of a tooth in the lower jaw.

This is a case of simple melancholy, but of a sufficiently obstinate kind, as it had lasted for three or four years. On examination the teeth themselves were in fair condition, but there were a good many ragged fillings and badly fitting bridges. (Figs. VIII, IX). These were attended to by the dentist who made them, a skillful man, but at times careless. The patient promptly recovered from her melancholy and at last accounts was almost free from the hysterical feeling in her throat. This case furnishes an example not only of bad dentistry, but of the good results which occasionally follow treatment in all probability not quite thorough.

PROGNOSIS.

It is important to realize fully that some dental lesions and many of the resultant nervous symptoms are self-limited. Abscesses occasionally break and discharge, irritated pulps may die, and inflammations of the periodontal membrane may or may not spontaneously cease. Possibly the majority of the nervous reactions in these cases may, even during the continuance of the exciting cause, be controlled by such measures as rest, diversion, tonics, nourishing food, and treatment of the digestive function.

I have had the opportunity of watching the steady improvement under treatment at the Cleveland State Hospital of a case not operated upon of subacute mania dependent on the impaction of a third molar tooth. An equally significant case came under my observation over a year ago. A robust man, 34 years of age, became suddenly melancholy four weeks before my examination. He was very dizzy, and had marked pain in the eyes and down the sides of the nose. Several of his teeth were badly decayed. Under tonic treatment by his family physician he recovered in three months

without dental treatment and has remained well. Such cases are instances of self-limited dental disease, or are analogous to the relief of headache from eye-strain by tonic measures, without glasses, and to the relief of toothache by laxatives or other general procedures without local treatment. These nervous reactions should be considered as occurring, most of them, not with the invariability of a reflex, but with considerable elasticity of action and reaction. The prognosis can be made only after full consideration of the psychic and somatic features of each special case, and after the careful study of the course of many such cases under different forms of treatment.

Experiment and observation of much wider range than are yet available are required for an accurate estimate of the probabilities as regards causation by dental lesions, and the chances of cure. The following is an approximate estimate based on the data which follow. Of all cases of neurasthenia and the psychoses, not due to obvious physical causes, such as digestive disorders and eye-strain, the great majority, possibly four-fifths in men and three-fifths in women, are due to dental diseases. The remainder are caused by many obscure visceral conditions. In women nervous and mental affections are often caused by pelvic disease, and this is the reason for the statistical difference as between men and women.

In cases in which marked dental lesions are found and no other serious disease is present the probability of cure can only be estimated by study of cases treated. The following is a tabulated statement of cases of neurasthenia and the psychoses seen in private practice during about 21½ years, in which skiagraphic examination was made. These results represent the first stumbling efforts in a new and unknown field and so do not adequately represent what may be accomplished by skill and careful endeavor along the same line.

	Number	Operation	Recovery	Convalescent	Improved	Unimproved	No. Data
Manic Depressive Type	11	9	5	..	2	..	2
Dementia Precox	10	8	5	1	..	2	..
Psychosis	4	4	1	2	..	..	1
Insomnia	7	6	2	..	4	..	..
Neurasthenia	26	15	1	4	6	1	3
—	—	—	—	—	—	—	—
	58	42	14	7	12	3	6

The following is a separate statement of the cases of impaction included above:

Manic Depressive Type	5	3	2	..	1	..	..
Dementia Precox	7	5	4	1	..	..	..
Psychosis	2	2	1	1	..	..	..
Insomnia	3	2	..	..	2	..	..
Neurasthenia	13	9	..	4	2	1	2
—	—	—	—	—	—	—	—
	30	21	7	6	5	1	2

In 22 out of 28 patients definite improvement began within a week or two after operation, that is, early in the period of subsidence of irritation.

The ratio of recoveries to improvements in these cases of neurasthenia seems to indicate an almost hopeless prospect of cure in this disease. The outlook is probably not so gloomy as it seems. Strict criticism of such cases results in classifying, as simply improved, many patients who have returned to a life of tolerable health and usefulness; however, to class such patients as quite recovered, presupposes some blindness of faith on the part of the observer. It should also be borne in mind that most neurasthenies seen in consultation are cases of long standing, suffering from complex visceral disturbances. Recovery is more certain in the young than in the aged, on account of the greater frequency in the latter of serious obscure disease of other viscera. Complications in the abdomen may, in the course of years, make recovery comparatively slow and imperfect.

The danger of recurrence is, in general, greater in mild than in severe cases, and is in inverse proportion with the severity and rarity of the lesion. Thus, one who is nervous on the basis of an ordinary caries is more prone to recurrence of both lesion and resultant symptoms than one who suffers as the result of multiple impactions, which are not only rare and severe, but cannot be reproduced.

Prognosis in cases due to dental disease must, to some extent, involve the question whether the effects of dental lesions on nerve and brain are unique or are duplicated by painless disease in other organs. The following cases may aid in its solution.

Years ago a young physician had made the round of all the specialists and been condemned by all, not to death, but to the life of a neurasthenic. He had the flushing, the fatigue, the misery. He said to the last consultant that all his orifices had been examined except the rectum, and he would have that seen to. Search revealed an ulcer, the ulcer was excised, the patient at once recovered.

Some time since a woman of fifty developed neurasthenia. Specialist after specialist excluded all organic disease. Fatigue persisted, emaciation increased, but no pain pointed to disease of any organ. Postmortem examination revealed a cancer of the stomach.

A few years ago one of Philadelphia's greatest physicians began to suffer from fatigue. Eminent specialists diagnosed nervous prostration. He went to California for a year of rest, died suddenly and the cause of his nervousness stood revealed in an organic heart disease too obscure for diagnosis.

A woman 27 years old, during several pregnancies had become distinctly unbalanced mentally. At these times she was restless, sleepless and had various delusions. She showed a tendency to suicide and sometimes slipped away during the night, and on several occasions was only brought back after a long chase. At one such time in the early morning hours her husband dragged her from the waters of a lake. During the year before

I saw her in consultation, symptoms had extended into the time when she was not pregnant. She had treated the children violently, was becoming unmanageable, and in fact was rapidly developing the mental condition known as dementia precox. When seen she was once more pregnant, was growing more violent, and the question arose whether an operation would be of benefit, or whether it would be necessary to send her to an asylum. A radical operation was urged and carried out. The uterus and ovaries were removed. The patient made a rapid recovery, acquired a physical strength and vigor for many years unknown to her, and now after four years, is carrying an unusually heavy burden of educational work and responsibility among the very poor.

These are not rare instances. They occur constantly in the practice of hundreds of physicians.

Once in a German restaurant, Mark Twain ordered wine of a certain brand. The bottle came marked with another name. When the waiter's attention was called to the fact, he said, "Ah, yes, it is a mistake," took the bottle to a corner of the room, changed its label and brought it back with a satisfied smile. This is the exact status of neurasthenia and the psychoses today. They are called functional disorders, and when the lesion is by chance discovered, when it becomes too obvious to be longer ignored, the label is quietly changed.

Whether serious dental lesions may occur quite without symptoms is an interesting question, and to aid in its solution I have made an investigation of the dental conditions of a number of the students of the Western Reserve Medical School. To determine the incidence of dental lesions in persons of normal nervous health it would have been necessary to exclude all those suffering from nervous symptoms. It has been thought better to examine students at random and to compare the history and the skiagraphic findings in each case. The results obtained so far show a moderate amount of dental disease in many of the students, and a moderate amount of nervousness which fairly corresponds in extent and intensity with the dental irritation. The findings will be published later, with the hope that they may serve as a basis of comparison with cases seen in practice.

TREATMENT.

In the management of nervousness in all its forms, as well as of melancholy and other mental aberration, rest and good food, attention to the digestion and bowels, and iron and other constructive measures are efficient and highly desirable. All these are measures designed to increase inhibition and heighten resistance. Psychotherapy when applicable has something the same effect. Radical operative treatment of dental and other irritating lesions has advantages over other methods in comparative speed, ease, and permanence of result.

Of dental technique in relation to these diseases, I cannot now speak. A word, however, on the dangers of conservative dentistry may be allowable.

with a suggestion as to how some of them may be avoided. I have on three occasions, after the killing of the pulp of a tooth, watched in my patients the rapid development of an abscess at the root. In each case there were severe insomnia and melancholy, and periods of excitement in one of them. In no case was there toothache. There was at most an occasional slight twinge in the ear or in some tooth, not always the affected one. In all three instances the symptoms rapidly subsided after extraction of the abscessed tooth and without other treatment.

In several of my patients severe nervousness, insomnia and melancholy have begun soon after extensive bridge-work and capping. These symptoms have persisted several years without pain, and relief has followed only after removal of the irritation in teeth and jaws. Skillful work is in these cases not a positive guarantee against subsequent nervous disaster. There is no sure method of rendering a so-called dead tooth aseptic, and as yet we have no adequate knowledge of the dangers to the nervous system, of capping, crowning, root-work and the making of bridges. These operations, mainly if not entirely due to the genius of American dentists, should be fully investigated by skiagraph in their relations with nervous conditions, and can only be safeguarded by skiagraphic diagnosis both before and after operation.

The idea of the mass of the medical profession in regard to the mutual relations of lesion and of pain is probably fairly expressed in the following extract from the report of a medico-legal case:

"Finally four doctors, after exhumation of the burned body, swore that many of its front teeth had long been missing, and that the remainder were in a state of decay that must have caused intense pain." The fact with regard to dental caries, especially in our asylums, prisons, and hospitals is that the decayed teeth and ulcerated gums remind one of Shakespeare's expression, the 'rotten mouth of death,' and all this putrid mass exists in mouths as painless as is often a gangrenous leg or freshly shattered arm. No amount of decay is in any part of the tooth whatever necessarily the cause of pain. Not only is this so, but pain is the exception. In most cases caries runs its course and ends in the death of the pulp without pain of any kind. This fact may readily be verified by even casual observation.

What is found true of caries by ordinary observation may be verified by skiagraph in regard to alveolar abscess, impaction and exostosis. These lesions are usually painless, but are often accompanied by other profound nervous and mental reactions, as has appeared in the course of these remarks.

Procedure in every case should be as follows: Inquiry should be made of the patient's preceding nervous and mental condition and a written record preserved with the dental history. After any operation involving a dead tooth, or the killing of a tooth, the patient should be watched for the development of changes in the nervous or mental state, and nervous

disorders of any kind should be considered an indication for full ordinary and skiagraphic investigation of the teeth, even in the entire absence of pain and tenderness. Only in this way can serious consequences to nerve and brain be avoided.

The following is a form which may be used in taking histories:

	.....19....
Name.....	Toothache.....
Address.....	Headache.....
Age.....	Earache.....
M. S. Wid.....	Neuralgia.....
Occupation.....	Other Pains.....
Height.....	Dizziness.....
Weight.....	Nausea.....
Color.....	Melancholy.....
Nutrition.....	Excitement.....
Pupils.....	Irritability.....
Pulse.....	Impulsions.....
Alcohol.....	Nervousness.....
Tobacco.....	Nailbiting.....
Tea and Coffee.....	Undue fatigue.....
Cocain.....	Insomnia.....
Morphin.....	Delusions.....
	Hallucinations.....

Key—*a* Mild occasional; *b* Mild continuous; *c* Severe occasional; *d* Severe continuous.

DISCUSSION.

DR. J. F. STEPHAN, CLEVELAND: In the treatment of such cases one should have a thorough knowledge of psychology. I had a case where the patient was very nervous, irritable and easily fatigued, there was no pain, and it was with difficulty that the trouble was located, but on examination of the teeth found that the third molar rested above and against the second molar, and on removal of the second molar the third came down into place and the patient recovered.

All cases of diseased roots and perhaps impactions should not be removed surgically; there is a field of dental medicine. Judgment should be used before operating.

The trouble cannot always be detected with skiagraphs; they do not show inflammation of peridental membrane. There is danger of being misled, not fully understanding the case as we should. There are other causes of insomnia and dementia than conditions and diseases of teeth.

There have been many cases where the doctor was unscrupulous in aseptic methods, but dentistry is on a higher plane, and we are receiving greater results through the field of dental medicine than heretofore has been possible. The work of Dr. Upson is pioneer work and we should aid in it as far as we can.

DR. J. W. VAN DOORN, CLEVELAND: It is to be regretted that Dr. Upson's paper came from the medical instead of the dental profession. He has demonstrated that more serious trouble than pain comes from diseased teeth. It shows the delay of usefulness to suffering humanity which falls to our care.

The X-Ray should be used if an adequate examination cannot be made or sufficient advice or assistance given to the patient without it. It is due to the patient that we should know the use of the skyograph.

I sent a man to a doctor for an X-Ray examination. I could find no evidence of the molars being involved, there was no pain particularly in that region, but the skyograph showed where the difficulty was.

DR. V. E. BARNES, CLEVELAND, said that he believes that such conditions as Dr. Upson has shown can be prevented at the beginning, by treating the young child when teething.

DR. W. A. PRICE, CLEVELAND: Skiagraphs may be misread. We cannot tell whether root filling is complete or not, as the X-Ray does not show through opaque or red oxide lead.

There is great danger in using the X-Ray. One exposure may cause sterility for life. If it cannot be used judiciously, it should be let alone.

DR. W. T. JACKMAN, CLEVELAND: I am sorry Dr. Upson's paper did not come from the dental profession. It makes me feel that I ought to have an X-Ray apparatus at once.

Dr. Upson said that pain is not the result of dental caries. My experience has been that there is more or less pain when the pulp becomes involved. If he means insane persons, they are incapable of judging whether they have pain or not.

DR. J. W. CULVER, CLEVELAND, said he found in his experience with patients in the hospital for epileptics that their teeth were not sensitive, as they could be extracted without administering anæsthetics.

DR. F. W. LOW, BUFFALO, N. Y.: I had a lady patient who complained, when I operated on her lower teeth, of having an erotic sensation. I lost track of her for several years, but afterwards learned that she died in the Buffalo State Hospital. I have been curious to know whether this case of insanity was not due to infected teeth.

Since then I had another patient who was suffering from nervousness and melancholy, had symptoms and was being treated for ovarian disease, but after extracting some of her teeth, which I found to be impacted, she immediately recovered and is now enjoying good health.

In closing the discussion, Dr. Henry Upson said: The question has been asked whether pain is experienced in alveolar disease. I have proven there is not in cases of abscess at the roots of impacted teeth, where the patient was suffering with nervous strain and melancholy. I have had an opportunity of seeing patients very widely in New York insane and penal institutions, and have had case after case of mental disease, when on removing certain of the teeth the patient recovered. Insomnia, restlessness and melancholy, which have been going on year after year, are breaking down diseases and intimate poisoning of some kind, and I have found that abscesses at the roots of teeth and jaws are capable of a very profound poisoning.

EVERYTHING was made in the beginning, and he who sees a new thing has just washed the windows of his own soul. The thing was always there, but the shade was down and the curtain lowered on the grime of ignorance on the windows, or else he could always have seen it.

NERVOUS DISEASES IN CONNECTION WITH THE MOUTH*

By W. A. Cook, D. D. S., Coldwater, Mich.

DURING the last quarter of a century dentistry has experienced a marked progress. It has come to be associated with the systemic disorder in nearly every phase. The great surgeons are paying special attention to the oral cavity before their operations, many refusing to operate until the mouth is in a healthy condition. And it has become very evident that the oral cavity must cease to be considered as an isolated field of study and treatment.

The subject of this paper, "Nervous diseases in connection with the mouth," is one that has interested me deeply and one that should interest all of us. We have all seen various nervous cases in our practices, some being more pronounced than others—and if we have followed them with an object of general improvement, we have been amply repaid with gratifying results.

When you consider this subject you will readily realize that it is a ponderous one and opens an extremely large field of subjects, each one being sufficient for an interesting paper.

I do not wish to go into the various subjects, but will attempt to interest you for a brief time on a subject of nervous diseases that affect the mind, such as melancholia, hysteria, mania, insomnia and insanity.

The history of insanity is probably as old as the human race. Medical writers described it from the time of Hippocrates and Plato and in the sixth century the Jewish monks built an asylum for their insane.

Various causes have been ascribed to it—Heinroth, a German, thought that all insanity began in vice and that it was brought on by a conscious neglect of God's will and that the only way to avoid it was to be in the Christian religion. But since that time, and more particularly during the last quarter of a century, the theory of physical disease as a basis of insanity has prevailed and there has been a rapid advance in our knowledge of the pathology and treatment of the disease of the mind so as to place them beyond the pale of mystery, but on the same footing with other diseases to be treated on the general principles of common sense and medical science—and a great deal of stress is placed on the science of dentistry. Today we have men outside of our own profession (neurologists) who are making dental disorders a special study in connection with diseases that affect the mind and who are reporting wonderful results.

It has long been known that the teeth often cause these various diseases. In 1876 cases of dental origin were reported and, Equirol, a student of the French physician Pinel, stated that "the first dentition by causing convulsions in children predisposes to insanity and that tardy appearance of teeth sometimes causes it."

*Read before the Southwestern Michigan Dental Society, April, 1909.

Henry S. Upson, M. D., Professor of Diseases of the Nervous System in the Western Reserve University, attending neurologist to the Lakeside Hospital, Cleveland, Ohio, in answer to a letter I wrote him, says: "My cases prove, I think, conclusively that insanity not only may be, but is often caused by diseased teeth and in the majority of instances by teeth which give no indication by local pain or tenderness that they are the seat of any difficulty."

Also in his book entitled "Insomnia and Nerve Strain," he says: "Of the viscera responsible for the more obscure cases of nervous and mental derangement I have no hesitation in designating the teeth as the most important. This is not only on account of the common, almost universal, occurrence of dental diseases, but because these organs move during the period of their development through the solid framework of the jaw, highly innervated and clothed by a membrane sensitive to impact and to corrosive toxins."

Dr. Upson reports twenty-five cases of various forms of mental derangements that have come under his direct observation, which have their origin in dental disorders and each have shown a marked improvement by receiving the necessary treatment and most of them have entirely recovered.

One of Dr. Upson's reported cases resembles in detail a case in my own practice, a case of insomnia. He says: "One of the complications of insomnia which is of more than usual importance is arterial disease. Worry and other emotions are thought to create arterio-sclerosis. The underlying physical element which exists in many such patients is illustrated in the following case: A business man, sixty-five years of age, began six years ago to suffer from insomnia consequent, apparently, on worry over his financial affairs. For more than two years he suffered from marked insomnia and great mental anxiety, and then broke down in health. He had a slight stroke of paralysis, suffered much with bad feelings in his head of an indefinite character, but without local pain. An examination of his teeth showed that they were in very bad condition, and skiagraphs revealed multiple abscesses in both the upper and lower jaws. Extraction of some of the teeth was followed by marked relief, but the case remains incomplete therapeutically."

This resembles very much a case I have under treatment now. A business man in a good sized city of Michigan. A letter from a physician in that city says: "I knew Mr. X. in health and I always thought him a little eccentric which peculiarity seemed to increase with years." He also added: "I saw him much later (just previous to his confinement) in a very nervous condition which was associated with spinal rigidity and irritability, from which he did not get relief." He was then placed in an asylum here in the state where he remained two years and eight months. Shortly after his confinement he suffered a severe abscess. In his way of telling it he says, "My face all swelled up and a big bunch came in my mouth which was awfully sore, and they stuck a knife in it and afterwards they pulled

my tooth." The man has been a patient of mine for four weeks, and when I first saw him his mouth was in terrible condition, not one of his teeth being sound and not less than a half dozen abscesses, all discharging, many of his teeth having crumbled and broken off. He imagines that the roof of his mouth is all gone and he says that he has eaten an ounce of flesh from it. This is the only delusion he now has. He will press, or rather pull, at the anterior part of the roof of his mouth with his thumb. He also has a habit of champing and grinding his teeth and an authority in mental diseases alludes to this symptom thus: "Tooth grinding is produced by the action of the deeply situated pterygoid muscles. Champing of the jaws is produced by the masseter and temporal muscles. All the muscles are supplied by the fifth nerve and it is to their condition that we must look for information as to the condition of the central origin of the nerve." By means of the Gasserian ganglion and the small filaments, branching from it, the fifth nerve is brought into intimate connection with the dura mater and adjacent membranes. It is quite natural, therefore, that morbid sensations should be transmitted from these diseased membranes through the sensory branches of its portions of the fifth nerve back to its origin in the pons varolii and the medulla and thence be reflected outward along its motor tracts to the pterygoid and masseter. In this connection I might say that tooth grinding in chronic insanity is a noticeable feature and illustrates the possibility of morbid conditions existing in that region, thus causing an irritation which is transmitted to the central cells and are reflected back to the origin of the irritation.

I have not seen any improvement in my patient, but it is upon this data that I harbor sincere hopes.

Dr. Upson reports several cases of insanity from impactions. One an unmarried woman, twenty-seven years old, a teacher, for a year had been profoundly melancholy with intractable insomnia; delusion of various deadly sins and entire hopelessness of recovery. Restlessness was extreme, tonic and local uterine treatments were of no avail. As a last resort the teeth were examined. They were apparently in perfect condition. A skiograph showed an impacted right upper third molar tooth pressing against the second molar, a condition obviously capable of causing irritation. The symptoms in about a week after the removal of the tooth began to improve. Recovery was complete in about six or eight weeks, and has persisted. There had been at no time pain or other localizing symptoms."

Dr. M. Allen Starr, New York, says: "Among the several causes of neurasthenia and melancholia, the toxic origin occupies a prominent place. All degrees of morbid conditions and lesions may be followed by an insanity, sometimes coming on immediately after the reception of the lesion, while at other times it may be postponed and remain latent for months. A trivial local traumatism (especially in persons suffering from some constitutional disease) may start up an inflammation of tables of the skull and

the meninges beneath, that eventually may implicate the brain, either by direct extension of the process or by pressure upon it.

We are aware that lesions of dental origin are very prevalent and it is a rare thing to find a perfectly healthy mouth. Now, knowing the enervation and complicated anastomosis of blood vessels and nerves of the mouth and its adjacent parts, the close proximity of the Gasserian ganglion to the psychic centers, that infections are carried by nerves and blood vessels and that insanity is caused by these conditions, it is easily realized how an intoxication of dental origin could be, and is, the cause of many such conditions.

Many cases of insanity are diagnosed constitutional diseases, anemias, intestinal auto-intoxications, faulty digestion, dyspepsias, etc., but the oral cavity as an origin of such is very rarely considered.

A profound obstipation with absorption into the circulation of certain products resulting from the splitting up of substances (albuminous) within the intestinal canal may be the cause of acute insanity. Cases of this nature are by no means uncommon and should the inducing agents be recognized and the proper remedies applied to correct the faulty digestion, they are usually curable.

My experience leads me to believe that, if the mouth and teeth of the population were kept in a healthy state, we should seldom hear of gastric and duodenal ulcer, and the entire large class of dyspepsias. Appendicitis would be far less frequent. My experience is that dyspepsia, gastritis and enteritis, when they are chronic, are closely connected with and are probably due to faulty dental conditions. But these conditions are rarely attended to when a patient is treated for insanity."

It is generally conceded now that nearly all mental defects are traceable to abnormal physical conditions and the insane are entitled to such relief as surgical science may afford. In cases in which there are undoubted visceral lesions or focal diseases surgical interference is demanded. If a source of irritation is found it should be combated by the necessary remedies. Careful attention should be paid to the alimentary system and the diet. One man in the treatment of insanity says: "Sources of reflex irritation such as nasal polypi, decayed teeth, ingrowing toe nails, etc., should be removed. Think of the inconsistency. Advise extraction of the teeth because decayed and then blame the stomach for indigestion. But in the same connection no mention was made of the alveolar abscesses and impacted teeth, these two sources of extreme irritation.

In reply to a few letters I wrote to superintendents of different asylums, one said: "It is quite as essential for the physical welfare of the insane that their mouths should be kept in a sanitary condition and disorders should receive treatment as in the case of the sane. Perhaps more so. The insane should receive this attention for the same reasons that disorders of other organs and parts of the body should be looked after. I have

never known an instance of insanity which could be attributed to disorders of the teeth."

Another says: "The causative relation between dental diseases and mental disorders is one upon which I am unable to inform you definitely. I have not in my experience been able to observe any statistic upon this subject and I know of no literature relative thereto. Infection cases, I believe, could readily arise from dental disorders, but none have come to my notice."

Another says: "In reply, beg to state that we have never employed a dentist here. What work has been found necessary to have done, has been done by our local dentist, and in nearly all cases the relatives of patients have taken care of the bills. I doubt very much that any dental disorders are responsible for mental derangements. It is possible, of course, that irritation from teeth might be an exciting cause of a nervous condition, but I really believe it never is."

An explanation of why these conditions have not been considered and the afflicted given the benefit of the knowledge is clearly put by Dr. Upson, who says: "There seems to exist among physicians not only a disregard, but a distinct though mild dislike of the teeth as organs to be reckoned with medically, they being as it were an Ishmael, not to be admitted to their pathologic birthright. Lauder Brunton's essay on this subject is too little known and heeded, and few such systematic attempts have been made to correlate their disorders with the sufferings of the human race, except for the most obvious phenomena of pain. Ordinary pain at a distance as headache or neuralgia due to the teeth, though well known, is commonly disregarded. Even the various reflex nervous phenomena in children, convulsions, fretfulness and fever are not now ascribed to the irritation either of teething or of dental origin, but to digestive disorders. The state of recent opinions as enshrined in epigram is that "the result of teething is nothing but teeth."

A letter from Dr. Eugene H. Smith, dean of the Harvard University Dental School, says: "Dr. Upson's theory that there is a connection between defective dentition and insanity, was well received by the Massachusetts State Convention of Oral and Dental Hygiene, and Dr. Woodbury, who is a prominent neurologist here, took an active part in the conference, and is going to write you in detail in regard to the matter."

Gentlemen, I realize my incapacity to handle this subject, but have attempted to give you some ideas that may be had not occurred to you before and also some reports of men who are doing considerable work along this line. And if this paper serves to be a stimulus to even one of you, and he saves one person from that dreaded malady, I will be a thousand times repaid for my efforts.

DISCUSSION.

Dr. Rowley: I want to say a word of admiration in regard to the paper. I have read a good many papers before this society. I have listened to a great many. But

never one on that particular subject. I remember having a case at one time in my practice (and I have been in practice, like Dr. Rix and some others, a good long while—forty or fifty years) I had a case where a lady was brought to me, a young lady 23 or 24 years of age, by a physician, stating that the lady was losing her mind because she had had a bridge made that did not please her. I looked at the bridge. It was the most beautiful piece of work mechanically that I ever saw in a person's head. It did not have a defect. But there was something about it that did not please the girl. She was certainly losing her mind. Of course, I fell in with her ideas and told her that the bridge was all wrong, the occlusions were wrong and she was undoubtedly correct in not liking it, and all she could do was to weep and cry and wail, insane as insane could be. I pulled the bridge off and went ahead and made her a new one, about half as good as the one she had, in all probability, but it pleased her and restored that mental attitude to a normal condition. And that is one of the cases where the teeth had a direct bearing upon the mind and where it is liable to lead to insanity.

Dr. F. H. Essig: I think that the doctor who presented the paper has said about as much as could be said upon the subject.

I have just a little thing in my mind that came under my observation about three months ago that might touch on the insanity idea.

I had a patient that was troubled with a couple of incisors and I thought I could best treat them by placing on them a porcelain crown. I thought I had done a pretty good piece of work. In a few days she had facial paralysis and one side of the arm was affected. A physician was called but did not look at the teeth; instead of that he prescribed, I don't know what, but never thought of the teeth at all. The husband of the patient told me about a month after the work was done what had happened. I thought it was some systemic trouble that caused the paralysis and the weakened condition of the patient. I asked to have her brought to the office and discovered that one crown was very tender and sore. I immediately removed both of them. It might have been poor judgment, but anyway I removed them and the lady immediately recovered and is in as good health today as she ever was, and she cannot get over congratulating me and thanking me for the work I did. Now, the doctor in that case overlooked the idea of the teeth, which I will say 75 per cent of the physicians overlook under similar conditions, that causes this derangement not only of the mind but of the body as well.

I want to state another case that came under my observation. A physician ordered a lady to go to Ann Arbor for the removal of a cancer on the lower jaw. He was a prominent doctor in the country, and a very good physician. This lady came under the observation of another physician in our town and he sent her to the office and I discovered how the lower molar had abscessed through to the cheek and made a growth on the outside. It was very simple to me that it came from the tooth. I removed the tooth, gave her local and systemic treatment and in three weeks the lady did not care about going to Ann Arbor. Now, this is what a learned physician with a big practice was responsible for. He was ignorant of the oral cavity, as seventy-five per cent of them are. I think if we educate our physicians a little better along those lines that we, ourselves, will be better off and the masses of humanity will profit by it, too. I thank you.

Dr. Cook: I might suggest one cause for Dr. Rowley's case of insanity and that is that probably the bridge was set a little crooked and the strain made an irritation that was sufficient to affect the mind, that is the irritation being reflected from the cranial nerve centers. Another thing I might mention is that in the examination of the case there is only one possible way of making a correct examination and that is by a skiagraph. Oftentimes we have teeth that are affected by abscesses that are severe and there will apparently be no local trouble. But this is sufficient to give irritation to the brain. Impactions are many times the sources of trouble and the trouble can only be revealed by a skiagraph. If you have a suspicious case the proper way to advance is by examination with the skiagraph.

DENTAL DERANGEMENTS—CONTRIBUTORY TO TUBERCULOSIS*

By B. J. Cigrand, M. S., D. D. S., Chicago, Ill.

WHEN the scholar and investigator, Leeuwenhoek, of Holland, announced late in 1578, that the air and all material things were filled with minute living organisms, he astonished the world. But when he, while in company with some intimate friends, chanced to meet a tramplike vagrant, and upon passing the illy kempt and neglected human specimen, remarked "that there are more minute living things in that beggar's mouth than there are people in all Holland," his companions questioned his sanity. Time has demonstrated that the famous Dutchman was correct, and generations since his time have learned the purpose and destiny of this micro-organism. He had the courage to announce his findings, which demanded in those days a fortitude akin to a willingness to die at the stake or be placed behind huge locks and cold bars of iron. There has arisen from his discoveries more debate and more investigation than from an physiological disclosure since the dawn of time. He introduced us to a new phase of life, and acquainted us with the value of an animate creation whose numbers—like the sands of the sea or the leaves of the forest—are beyond the capacity of our mathematical skill to record.

Cleanly as may be the mouths of the distinguished hearers of my paper, the infinitesimal life present in the oral cavity of us here assembled measure more millions than there are people in all our country. Some of the minute organisms are not only harmless, but necessary in our continuance of life. They aid in a thousand ways to stimulate the secretions and assist in the processes of both waste and repair; but there are other micro-organisms within our mouths whose presence are indeed threatening and whose lodgment a damage to both our mental and physical well being.

The world today is intensely interested in these low forms of life, in these distantly related companions of our daily life. We have so carefully studied into their existence that we have classified these thousand different varieties and now and today know them by as distinct a name as is the optically recognized horse, dog, tiger, bear and wildcat. The investigators know their habits as thoroughly as we know that of the fox, deer, or squirrel; we as completely comprehend where they can be found and upon what they thrive as does the fisher where the perch, the bass or pickerel, can be found. All this is true scientific record; there is little guess about it. The facts are recognized, not alone in American laboratories, but as thoroughly understood in foreign rooms of investigation. Now the special kind of low forms of life in which I shall be concerned this day are the tubercle bacilli of the human mouth. I shall show, more conclusively, than I did at the national meeting at Buffalo, New York, in 1904, that the dentist more than

*Read before the Southwestern Michigan Dental Society, April, 1909.

any other scientist must be familiar with this subject and that he has equal rights with the physician in this public concern. We have great cause to be interested in the theme: we are by law made the guardians of the mouth—the portal to human existence.

We of today know the exciting cause, but the disease, consumption or tuberculosis was known thousands of years ago.

The ancient Greeks wondered, five centuries before Christ, when Hippocrates wrote that “phthisis is the greatest and most cruel disease, and the one that kills the greatest number of people.” The Bible tells of its ravages. In Deuteronomy xxviii, 21, 22, it is written: “The Lord shall make the pestilence cleave unto thee, until He shall have consumed thee from off the land. The Lord shall smite thee with a consumption and with a fever and with an inflammation and with an extreme burning.” If one is asked where the first case came from, one can reply, “where did the first man come from?” If one believes in our simian ancestry, it may seem to him significant that monkeys are especially susceptible to tuberculosis.

Today a phrase echoes in the larger cities from the Atlantic to the Pacific: “Tuberculosis is communicable, curable, preventable.”

Tuberculosis is a communicable disease. One person may catch it from another—but only in limited ways. Scarlet fever we catch from scales, typhoid we catch from bad sewage disposal and polluted water. Measles is communicated through the air; malaria by the bites of disease-bearing mosquitoes. Tuberculosis is communicated by the germ from the consumptive’s sputum.

How communicable is consumption? Ask a man of the last generation of what disease he was most afraid. He will say: “Smallpox, diphtheria, typhus, cholera, scarlet fever. We stood in fear of epidemics.” Yet what do the figures of the New York State Board of Health for 1907 show, the figures of a single state? That tuberculosis, with 14,906 deaths charged against it in the state of New York, claimed in 1907 more than twice as many victims as diphtheria (2,372 deaths), typhoid (1,608 deaths), scarlet fever (1,029 deaths), measles (995 deaths), and smallpox (10 deaths), *combined*.

But the lungs are a specially favored battle-ground for the tubercle bacillus. Passing the outlying stockades of the stiff hairs of the nose (for we ought to breathe through our noses), he runs the blockade of the glands in the throat and the army of little hair-like arms in the windpipe. He gets past the tiny, trap-like mouths that try to suck him in and to eject him again from the throat. If the enemy gains entrance into the lungs, he begins to build his bulb-like fortress. The word “tuberculosis” comes from the Latin “tuber,” a bulb.

These lumps in the lungs are the stronghold of the enemy. In them the single soldier becomes a million soldiers. In time, if unconquered, they break through the fortress, the tubercle lump bursts, the germs by millions

rush through the system, a cavity forms in the lungs where the hostile fortress was—and the victim is so much nearer death. The billion germs seek other centres of implantation, eventually other hostile fortresses rise, now in greater number. Still later, they, too, give forth their deadly armies, and as their poisonous, consuming effects become more visible, the victim is seen to have consumption.

1. Dr. W. F. Kelsey, of Marseilles, France, says:

“Even a healthy mouth is a hotbed of bacterial flora; then what a field for microscopic investigation must be presented by that of a phthisical patient. 2. Miller estimated that a typical unhealthy mouth which he examined contained upwards of a thousand millions of cultural bacteria. With every mouthful of food swallowed, myriads of these germs are carried into the already inflamed alimentary canal. The gastric juice being unequal to the task of annihilating this vast army of invaders, in whose ranks are enrolled, micrococci, staphylococci, pneumococci and even the bacillae of Koch, a secondary infection naturally ensues that aggravates all the morbid symptoms which were the original characteristics of the disease.

3. Dr. Dodd says: “Whatever may be said of the septic infection taking place through the mouth and teeth, there is no doubt as to the existence of secondary anemia, associated with lowered vitality and great foulness of the whole alimentary tract, resulting directly from buccal infection.” Aside from teeth of feeble resistance, annoying ulcerations of the tongue, of tuberculous origin are not infrequently met with. A distinctive feature of these ulcerations is that they are surrounded by yellowish dots, easily mistaken for follicular orifices, though in reality they are but minute abscesses which gradually coalesce with the principal ulcer. They are of slow development, partaking in this respect of the characteristics of tuberculosis itself. Except for the greyish surface and yellowish spots, one might readily mistake them for syphilitic chancre's though unlike the latter they are rarely the cause of glandular swelling.

One should insist upon the desirability of choosing food that contains a large percentage of lime salts, and which at the same time will fortify the teeth by the effort of mastication. Ferrier maintains that not only can the bones and teeth be hardened by diet, but the calcification extends to the other tissues and contributes materially to the cicatrization of the tubercles. Oatmeal, stale or toasted bread, rice and eggs with calcareous or mineral water, or even lime water can be prescribed. It is equally important to indicate what should not be eaten or drunk. Honey, sweets, vinegar, rich sauces, acid fruits, cider and even milk in considerable quantities should be avoided.

Dr. Kelsey also comments recently on our own dangers. “Whilst operating on tuberculous patients we incur a certain risk of infection that should not be ignored, as the bacilli of Koch is invariably present and at any unforeseen moment we are liable to be inoculated with the poison. Fortunately the majority of mankind is more or less refractory to the virus

and with due attention to antiseptics the danger, if not entirely averted, can at least be reduced to a strict minimum.

I would add that we must be better protected against patients breathing and our hands must be ever kept in mind. My greatest surprise is that we, who are so exposed to so many dangerous diseases of the mouth—that we live as long as we do.

A Mr. Lewis, who has studied the likelihood of consumption, directs our attention to the danger. Why is it that six marble-cutters or stone-cutters die to every banker, broker or company official? Is not the inhaled dust a principal cause? Cigarmakers are very prone to consumption; tobacco is irritating upon the mucous membrane, whose duty it is to be healthy and to intercept the tuberculosis germ in its passage toward the lungs. Bad air, long hours, unsanitary conditions play their part in all workshops where such disease-producing conditions are allowed to exist—the dentist and the confined official. Wherever labor is accompanied by conditions tending to produce ill-health, there the tuberculosis germ laughs with glee and lurks in the corner. He is a good waiter.

The great army of people infected from tuberculosis range between the ages of 15 and 35, while the origin and aggravating causes are subjects of great dispute; it is, nevertheless, conceded that certain predisposed conditions produce symptoms which are universally indicative of tuberculosis; while the conditions of the mouth have escaped the critical attention of the medical scientist it is, nevertheless, deserving consideration in that many ailments, we have physical and mental, trace their origin to disorders of the teeth. We have and are this day and generation giving too little attention to proper manducation and mastication, and observation should teach us that the primary requisites of good health are a properly organized and hygienic masticatory apparatus. In this connection the function of saliva must not be underestimated. Our hasty meals and hurried manner of eating that brings about circumstances that may be the initial cause of tubercular progress. The saliva is an essential intermedium to proper digestion, and if the latter is impaired there can certainly not be normal assimilation unless our foods are thoroughly insalivated while in the mouth, the further preparation of our edibles for the important transformation into blood has been impaired; this interference must, of necessity, beget impoverished circulation.

Nature requires that the food shall be crushed and pulverized by the teeth, and softened and chemically changed and prepared by the saliva, and when these two processes are accomplished, the food is ready for the stomach. The present prepared foods do not beget jaw action, hence I contend do not receive the proper amount of parotid saliva and the foods lacking this pre-stomachic treatment must of necessity lack in the blood-producing elements. The mischief of this poorly prepared morsel may be one of the prevailing ailments of dyspeptics, and may also be conducive to the ravaging increase of consumption. Tuberculosis makes great headway in any

system that is exhausted; in any person whose vitality is low; in any individual whose energy is lessened through impoverished blood. The action of the jaw being omitted, the flow of the parotid saliva is scant, the food morsel improperly prepared, digestion disturbed, the blood impoverished, and hence with the organic and systemic energy tuberculosis, pyemia and all consuming diseases readily progress. All this destruction of human life has been aided, not induced, by disregard of the cardinal principle of digestion, by our present methods of hasty eating, giving neither thought nor time to the process of manducation and mastication—the human or civilized species disregarding nature's greatest and most divine requirement—digestion.

The most astonishing feature relative to the causes of tuberculosis lies in abnormal conditions of the mouth; the large cavities filled with indescribable debris certainly tend to disarrange the entire digestive system. The conditions of these cavities when carefully examined under a microscope give evidence of a most prolific micro-organic life. These cavities hidden away from the access of a tooth brush are splendid harbors for the generation of tubercular. Nowhere in the entire human economy could you find a more congenial habitation for the germs of tuberculosis than in the deep seated cavities of teeth while they possess the three requisites to give assurance to their reproduction—namely: heat, moisture and oxygen.

Another element in a deranged mouth which adds to the likelihood of consumptive possibilities is the ulcerated tooth; belching forth pathogenic fluid called pus. This virulent matter seeping from the gums finds its way to the stomach easily, while this presence so unwelcome to the gastric glands prevents a proper gastric bath to the foods which lie within the walls of the stomach. Nor is the presence of the pus limited to the stomach alone, but follows the entire alimentary tract, endangering the entire system and digestion and eventually bringing about poisoned conditions of the entire human fabric; having thus undermined the circulatory system the feeble emaciated and degenerated being falls easy prey to the tubercular bacilli, whose attack cannot be withstood because of the lack of human vigor and cell-energy. Another important attribute of robust health demands that the mouth be in a positively sanitary condition, the so-called pyorrhea alveolaris or the wasting away of the alveolar ridge which contain the teeth and in this process the pus germs are fully as dangerous to health as the ulcerated dental organs. There are innumerable conditions of the mouth which yield pus as a result that in all of these dental disturbances which inaugurate this poisonous matter must be relieved and cured or the pus upon being swallowed will invite the white plague—consumption.

The bacillus of tuberculosis is present and doing mischievous work in many mouths which have had so-called dental attention. The average cement filling is a porous material with caverns large enough for a conglomerated mass of putrid vegetable and animal debris to lodge. Within this apparently well fitting cement filling there is a splendid shelter for myriads

of bacilli to colonize, hence the large cement filling is not a safeguard against bacterial generation, because of this spongelike porosity. The amalgam fillings share a like objection, but not because of its porosity, but because of its general change ability. The mass of amalgam shortly after hardening, shrinks, allowing its circumference a wide gap between its border and the walls of the cavity. In this circular opening clogged with the fluids of the mouth and disintegrating matter of bacilli, tuberculosis again finds a happy shelter. Gutta-percha so frequently employed by some of the practitioners is absolutely unreliable as a means of excluding tubercular matter. My own personal tests of the cement, gutta-percha, and amalgam fillings lead me to the belief that the gold leaf filling, the porcelain and gold inlay are the only fillings giving promise of tubercular exclusion; and though the inlay fillings are held in position by a thin film of cement, it, nevertheless, does not possess bulk, and hence must necessarily be more assuring in its sealing properties.



TUBERCLE BACILLI

The barbaric fashion of prodding the teeth with cheap wooden tooth picks, from whose sides bristle forth infinitesimal splinters inaugurate inflammation of the gums besides causing openings between the teeth which should be tightly filled with gum tissue. The gums are filled with broken bits of wooden slivers and the opening created becomes filled with decay as disintegrating masses of food stuff and in this convenient habitation we have again erected a temple to the Goddess of Tuberculosis. Last and far from least is the part the practitioner plays in spreading this dreadful life destroying disease. The ethical practitioners of dentistry are constantly taught at the Society of Communion the essential and all important subject of hand and instrument sanitation. The reckless dentist who is disregarding of the cleanliness of his digits and who is unmindful of the disinfection of instruments, is a menace to the community. I could imagine no more certain way of spreading the disease of tuberculosis than by advocating indifference of finger and instrument cleanliness. It would almost seem to me within the province of the Department of Health to examine into the practice of all dentists and where the investigation positively demonstrated the disregard for cleanliness of hand and instrument a temporary revocation

of his license might remind him of the teachings he received while at college pertaining to the subject of "Office Hygiene." This rigid enforcement of compelling practitioners to disinfect their hands and dental instruments would not only be a safeguard against the spread of tuberculosis especially but would be the means of preventing contagion of many other ravaging human disorders.

In dentistry the supposedly simplest of all operations, namely, that of cleaning the teeth is often productive of serious and injurious results, and not infrequently a patient presents a single tooth possessing pyorrhea pockets. The thoughtless and careless operator dipping excavators in these pockets proceeds to the adjoining healthy teeth. In less than 90 days he has by this reckless attention inoculated the entire gums with pathogenic life whose ravenous appetite for human tissues is beyond the description of any scientist. The proper cleaning or purging of the teeth is essentially one of the most delicate and painstaking procedures in the art and science of dentistry. Peculiarly enough, there is a strange coincidence between the raging of tuberculosis and the raging of dental decay, both diseases or ailments having periods of cessation; hence the human body seems immune to every attack. Both of these agencies flourish pre-eminently between the ages of 13 and 36. Dental decay in the major number of cases practically disappears as does tuberculosis as age creeps on. Hence the importance of looking into the welfare of those who are entering the prime of life. This nation, quite contrary to the estimation of President Roosevelt, is not suffering from a lack of birthdays so much as it is from a lack of celebrating birth anniversaries. We have a great birth rate in the United States, but coupled with it is an overwhelming death rate of child and juvenile. Save the children that are born and we need have no fear for the depopulation of the land. Let the central government at Washington, the governments at State Capitals and Municipal governments spend one-half as much money on preventing as they now expend on the cure and our country as a whole will have attained a physical perfection which will redound to the endurance of the republic.

DISCUSSION.

Dr. R. C. Brophy, Chicago: I want to say in the first place that I am glad to be able to attend this meeting, I am not a member of your society, and I have not been present quite as often as Dr. Cigrand, perhaps, but I notice that I attend quite frequently. I am proud to have been placed on the program to discuss the paper. I would have felt very much better about it, however, had I had an opportunity to read the paper.

Dr. Cigrand called me up last Saturday and told me that I was to appear. I asked him if he would be kind enough to let me read the paper. He said it was impossible—

Dr. Cigrand: If you had been at the hotel this morning at 4 o'clock you could have read it.

Dr. Brophy: He said it would be impossible and at the time I supposed that the reason why it would be impossible was that it was written in his own handwriting. But I discovered later, as a matter of fact, that the paper was not written. I am in-

formed by Mrs. Cigrand that very frequently when the doctor is down for a paper, he goes home at night, forgets about the paper, and goes to bed, afterwards remembers about it, gets up and writes one, then goes back to bed.

After all, I have always found Dr. Cigrand's papers very easy to discuss. You all have noticed that he says very many things which are extremely questionable; so that an opening is always left for discussion, the combating of his arguments and tearing to pieces of his theories, and while at present I feel that the openings are not quite as free and plentiful as usual, yet if I were a bacteriologist or if I were better read along the lines of tuberculosis I might be able to find some opening for discussion, nevertheless.

Without doubt, the condition of the teeth, the dental condition, exerts an influence upon the physical system, and has to do with tuberculosis. I would have liked the paper better if the title had been different. What the doctor said in connection with the effect of general dental conditions upon the disease known as tuberculosis applies, as I understand it, to practically every disease. The mouth, of course, is the gate-way of the body. The sustenance of the system is taken in through the mouth. The preparation of food which is the fuel of the body, takes place in the mouth, practically altogether, so nutrition in passing into the system passes through the mouth and is contaminated, if there is contamination present.

I am satisfied and I think you all are satisfied that a mouth that is absolutely sanitary is one of the things very difficult to find. It is not altogether a question of oral condition; it is eminently a question of the condition of the teeth—the dental condition.

We all know that mastication of the food is essential, and we all know that defective teeth will not masticate the food properly. We all know that when a few teeth are lacking there is an effect produced upon the adequacy of the masticating process and that it is interfered with.

We can go further than to study the condition of the teeth, as to whether they are perfect, as to whether they are free from decay, and take up the question which Dr. Cigrand did not refer to, and that is the condition often found in the mouth where artificial teeth are worn, where there are bridges or crowns or plates. Dr. Cigrand confines himself to operations in the way of fillings, but my observation has been that if you want to find a field, a harbor for bacteria, look under the plate; look under the edges of bands; look underneath the so-called self-cleansing bridges. There is where you will find bacteria in their greatest numbers. I believe that the question is a very important one, gentlemen, and I am sorry I am not better prepared to discuss it.

Dr. Le Gro: This is a subject that was almost entirely new to me. I am convinced that Dr. Cigrand has made a few very startling remarks today. It has started me to thinking. One of the most important remarks that he made was in regard to "pus stopping the action of the gastric juices in the stomach." If that is so, we are certainly in a very important position in the science of medicine. I can see where I have got one of the greatest leverages I have ever had to talk to patients that come into my office who have the slightest indication of alveolar abscess or the slightest indication of pyorrhea or a bad cement filling. I shall have the finest argument I ever had in my life. And if you look at it as I do you are going to take out all of the old ragged fillings and temporary stoppings and you are going to put in there something that is sanitary and try and keep the mouth in a sanitary condition.

Now, in regard to cement fillings—when I was a student in Ann Arbor in the study of bacteriology we demonstrated to our satisfaction that we could force germs through all kinds of unglazed porcelain. That being so what must a germ do with an ordinary cement filling. You put a cement filling in, and see what is possible to go through the cement fillings, except when you have got a perfect contour and your teeth

are good and you have a high polish over the cement filling. But it is after that that the greatest evils come.

There is a decay setting in in the cavity and soon it becomes a harbor for disease germs. The moment the cement begins to wear down there is going to be a new cavity in there for the reception of these germs. The point I want to get at mostly in the discussion of this paper is, and it came to me while Dr. Cigrand was reading it, that we must not start with the mouth or the alimentary canal but we must start with ourselves.

Now, just recently in Detroit they had a very sad experience with a lady dying as the result, ostensibly, of a supposed dental operation. I was called up by one of the members of the state board to look into the case and I went to this man's office and after looking thoroughly into the case I became satisfied that he was not responsible for the blood poisoning resulting from this operation. Yet when I was looking things over I found out how he was sterilizing his instruments. He had a little receptacle, a little copper receptacle,—there were some gas jets under it with a false bottom filled with air, and he was allowing the vapor of this steam to percolate, not percolate exactly, but permeate through the instruments. He said he used that thing and did not believe in hot water. Well, I said, "Doctor, don't you know that steam will not sterilize instruments unless you will have steam, live steam, and put under a high pressure and forced on the instruments for at least five or ten minutes?" For we demonstrated in the University of Michigan that sometimes five minutes in boiling water would not kill some germs. And I told him that any attempt to sterilize instruments with steam vapor was a great mistake. There is only one process, in my judgment, and that is boiling water; and when you buy your instruments you should buy those only that you can put in a pan of water and boil the life out of the germs, because that is the only way to keep an instrument clean and aseptic.

In the nerve canals, I have found for a number of years that while I thought I was successfully treating nerve canals, I would now and then have a little periostitis at the point of the root, and it was because I did not have my nerve instrument thoroughly aseptic. So now I take my nerve instruments after boiling and put them in little glass bottles, with absorbent cotton over the top, and a stopper over that and sterilize those instruments thoroughly. When I use them I have them sterilized again and put back into this same glass receptacle, so they are in a good state of sterilization and with careful instrumentation I find this trouble is eliminated. I merely mention this because it is in line with some of the thoughts that Dr. Cigrand has brought out. So I say we must start with ourselves. We must start with our own fingers, our digits. You can wash your hands as thoroughly as you have a mind to, but great care and attention should be given to the space under the finger nails. A surgeon in a hospital about to do an operation will wash, not only his hands, but his arms and under the finger nails especially. Why should we not do the same thing in dental operations? You have often abraded the skin of the mouth, the mucous membrane, and you found it did not heal up for three or four days. That might have been from infection that came from a dirty instrument or dirty hands. Those are things that we have got to think over seriously.

Dr. C. B. Blackmarr: I had not intended to say a word on this subject; but it is a subject I am thoroughly interested in. My attitude in regard to it makes me think of a little story about the boy who went to the Christian Science healer and told her that he had a stomach ache. The boy had eaten green apples a few hours previously and he knew that he had a stomach ache. The Christian Science healer told him that he did not have it. "Oh," but he says, "I have inside information that I have." And so with me, I am interested in this subject of tuberculosis in a personal way.

My wife contracted tuberculosis of the throat nine years ago. She was sent to Dr. Vaughan and from there went to one of the finest specialists in Denver and he told

me that in all probability she could not live more than six months. She had lost her voice entirely. From there she, at my solicitation, went to Colorado Springs and through a friend of mine went to Dr. Gildea. I am speaking about this to show you the skill in handling a tubercular sore throat. One of the specialists in this state who has a reputation, could not find nor see those tubercular ulcers in her throat. The specialist in Denver could not find them. When she came to him in Colorado Springs she was obliged to be carried the last block. Dr. Gildea not only found them but commenced treating her; he could go down in the throat and touch these tubercular ulcers with his medication and he cauterized them and he had her well in just a few months. I only mention that to show the difference in skill there is in handling those conditions. I have been very much interested in regard to that subject from the time that my wife began having this trouble, and I have been handicapped in carrying out my work in dental lines; I have had to devote much of my time to my wife on account of this trouble and the anxiety and worry that I have had over it, and the time I have put upon it has made a good deal of difference with me in my practice of orthodontia. I would say if any of you are interested in it, when coming through Jackson, I would like to have you stop and see the place I have for my wife to sleep in the open air. And by the way, I knew that I had always to be careful in regard to myself to avoid contracting tubercular conditions, and from my looks I probably demonstrate that I have been and that I have held my own.

While I was trying to get my wife well, I protected myself, of course, being somewhat selfish. I pulled out my bed also on to this open porch. I have a porch that is 18 by 24 feet on the second story, with open spaces 10 feet by 4 on the three sides, and, of course, with the anxiety in regard to my wife, the work that I was doing at that time, having a very large practice, I was pretty well run down, but I found by living in the open air, my nerves were built up in a way that I was perfectly surprised at.

In regard to teeth, my wife had as fine a set of teeth and as free from decay as any patient I ever saw.

I have noticed patients along my line of work, who came to me, who were mouth-breathers and whose tonsils were badly diseased, and I have in mind one of them who came down with tubercular trouble, and was treated for two years with open air treatment and everything that could be done. Later she had her tonsils removed at my suggestion and they were in such bad condition microscopically that she certainly was affected with tubercular trouble through the tonsils and as a consequence, was in that bad condition. But when the tonsils were removed she speedily got well.

Dr. Le Gro spoke about annihilating the germs that were in the fillings in the mouth. Of course that would be quite a job. There are a whole lot of bugs that are useful; there are a whole lot of bugs in this world that are doing more good than all the dentists in the world. And that is giving you all a little hint. I will not follow that subject up. I read just recently in a medical magazine a paper in regard to tuberculosis of the gums. I have been pretty thoroughly convinced in the last few years that there are more tubercular conditions of the membranes surrounding the teeth, and also other parts of the mouth, that many dentists are treating for pyorrhea, when in reality it is a tubercular condition of the mouth. I want you to pay attention to it, because I think it is worth your while to notice it. I think there is something in that. The medical journal that I have mentioned that contains the article written by Dr. Robert Levy, who is a specialist in Denver, is the December, 1907, number of the *Annals of Otology, Rhinology and Laryngology*. The title of the paper, "Tuberculosis of the Mouth," and the paper is illustrated with colored plates. It is a very important subject, it seems to me.

The idea that Dr. Cigrand spoke about, protecting ourselves from tubercular patients, is something that I think we ought to pay particular attention to. We don't know as much about tuberculosis as we will know. There are some very strange things

about it and I think we ought to protect ourselves from it, in all probability more than we do.

Dr. T. G. Rix: I do not propose to say anything on this subject, Mr. President, except that it is one of the most interesting papers I have ever listened to. It seems to be along the line of a new thought. It seems to be in advance of anything that I have listened to or will listen to in a good many years, and it will give us all food for thought for a long time to come. I am sure that Dr. Cigrand has opened up a new thought in the line of bacteria that we all ought to be interested in and investigate in the future. I am very much pleased with the paper and I shall try to think it over for a long time and study it as well.

Dr. A. C. Runyan: I was very much pleased with one section in regard to the subject of when people are more susceptible to these conditions. You will remember in my paper last evening I brought that out with the illustration regarding the condition of the eighty per cent of the children of this country, the condition of their mouths at the age of from 12 to 15, and that is the period which Dr. Cigrand speaks of as the most dangerous period for contracting tuberculosis or any of these diseases, just at the age when these people are coming into adolescence, and the mouth is in poorer shape to properly prepare the food for assimilation and there are pus-producing sores and broken down temporary teeth that are discharging pus into the system. I would like to call your attention to that condition and why so much depends upon the dentist in taking care of the children at that age in life.

Dr. Rowley: I would like to say just a word in regard to Dr. Cigrand's paper. It seems to me that he has shaken the black flag in our faces and he has not given us any opportunity for relief. He tells us three things to use,—the inlays, porcelain and gold, gold-foil and the amalgams in all fillings. Now that is all right so far as it goes. But there is quite a big ground there for discussing that subject, and he also says to do away with wooden toothpicks. Now then, the question is does he want the quill pick used and put back into the pocket, full of germs, to be used again after the next meal? I take exceptions to that part of the paper. I believe that the wooden toothpick is far better than any toothpick that we can use, and by all means a toothpick should be used.

THE EFFECT OF MIND OVER BODY *

By Frederick A. Rhoades, M. D., Pittsburg, Pa.

FOREL says that two-thirds of persons who are ill will recover themselves; one-half of the remainder do not care for a physician or will die regardless of treatment, leaving but one-sixth of those ill who can be cured by the physician.

The effect of the mind over the body has a scientific side, but I will make this phase of the question very brief and devote our attention chiefly to the practical side.

We are continually confronted by the terms mind, spirit, soul, etc., in treating any question along this line. We are told that these words are derived from certain roots in Latin, Greek, etc., which had such and such a meaning; hence the words we use must mean the same. This is very absurd reasoning. The wise men using the ancient languages had to use a similar line of reasoning as we.

*Read before the Odontological Society of Western Pennsylvania, March, 1909.

It is this difference of reasoning that accounts for our different religions and creeds. But why this difference in men trained alike in the same age and in a similar environment?

The cause is entirely one of different stimuli. The protoplasm of any living organism responds to stimuli in a definite way; the response depending upon the form of the stimulus, the end organ affected, the receptive organ and the nerves carrying the impulses. We must not forget the response is determined largely by the strength and number of the stimulations. Unusual stimulation can produce the genius that later may become an imbecile.

The proper study of mankind is man; many care to study him only in the interesting phases of life, continually being presented to us, the abnormal conditions, whether physical, mental or moral.

I am firmly convinced that the mind and the body are one and the same and that a muscular contraction and a thought are but different manifestations of the one and the same entity.

We express this belief I have given you for the oneness of mind and body by the term "monism," a belief formerly held by many metaphysicists, abandoned to a great extent, but again held by many of our best scientists.

In order to explain the cause and cure of many of the ills which afflict man, it is necessary to make a connection between what we call the brain, the highly developed mass of nerve tissue in the skull-box, and the rest of the body. We forget that this nerve tissue is quite similar to other nerve tissue of the body and further that it is continuous with other parts of the nervous system; these other parts of the nervous system in turn being connected very closely with the blood vessels, muscles, glands, etc., of the body. There are no dividing lines; no separating lines of demarcation between this wonderful "brain" for the "mind" and the rest of the nerve tissue. Nor can we tell by the use of the microscope where this "mind tissue" begins or ends. I would that you all could perform with me certain experiments, observing how, when a frog is beheaded, the functions of the remaining parts of the body continue to a great extent; the heart continues to beat; the animal respires; if it is irritated by pinching a foot, it will draw the foot up, or if we place a piece of paper, having acid on it, upon one of the legs, it will try to remove it with the other leg.

Not only are such reactions true for the frog, but even in the dog a large portion of the brain can be removed, the entire motor area of one side, without, as far as can be determined after a few days' lapse for recovery, any loss of brain power whatever.

Again we know that certain organs, as the kidney, can be removed from one animal and transplanted into another and functionate. The heart can be removed, kept at a low temperature for even weeks, and when perfused with solutions similar to blood, it will contract in a normal manner for some time.

These and many other experiments have convinced me of the oneness of mind and body. Strictly speaking we should not say "the effect of the mind on the body nor the effect of the body on the mind," but rather speak of the physical and mental or psychical manifestations. In regard to the terms spirit and soul, I have nothing to say. I consider them entirely separate from the mind and body. The day is not far distant when we shall be able to demonstrate quite satisfactorily that the "mind" extends over the entire body. The cells of the stomach which determine the quality and quantity of the gastric juice; the cells of the kidney which determine exactly what substances shall remain in the blood; the cells of the glands beneath the skin which determine the nature of the sweat, which leaves our body in a large amount daily; all of these cells are, I say, thinking cells.

Can a part of our psychical centers be active and a second part lie dormant or are there two distinct divisions of this part of our body? Do we have evidences of a hyper or iso-conscious state and of a sub-conscious one? The former being the one active in our waking moments and the other, the sub-conscious state, the active condition in our dreams, when we walk in somnambulism, in the state of hypnosia, or when we are "en rapport" with another sub-conscious mind and we receive or send telepathic communications.

That these conditions really exist there is no doubt. But how, I cannot explain. It is said that the healthy body does not dream. The senses react to stimuli in sleep out of proportion to the waking period. Loud noises may fail to awaken, but the faint noise of a telephone, which we may have expected, never fails to arouse many persons. We can determine quite accurately the period when we shall awaken. These with many other phenomena make this question difficult to decide; but it does appear, that as the cause of sleep is not known but which we know has to do with fatigue and to a less extent to suggestion, these various states are but the different reactions of the same structures to various stimuli.

The difference between an animal not human, and the human animal is not quite well understood. It appears that the higher the mental faculties in man, the less the instinctive manifestations. The young child probably shows less instinctive reactions than any other creature. Many show this loss even at a later period of life.

Can animal reason? Does reason make you happy?

From a practical standpoint, it makes but little difference whether mind and body are the same or not; it concerns us whether we can cause illness by some manifestations of mental action or whether we can remove disease by concentration of thought. There can be no doubt in the minds of any reasonable person that many of the ills with which we are afflicted are self-imposed by the conditions of our mental state. The effects of anger, grief, fear, etc., upon the body are very apparent; yet they are not appreciated. It is quite possible to produce disease which will confine the victim to bed for years by suggestion, yes, even by auto-suggestion. A half dozen

persons can suggest to Mrs. A. that she looks badly, and that she should consult a physician, with the result that she will actually feel badly and go to bed. I have had persons come into the office, fearful for their health, so weak that they could hardly walk, but after an examination and upon being told that there was nothing the matter with them, they would go out in the best of spirits. Nothing will so surely produce a condition of nervousness in a young girl as being compelled to daily listen to the bemoanings of a hysterical mother, who is continually craving sympathy.

Dr. Hunter, the great anatomist, stated that the cause of his heart disease from which he suffered was due entirely to a fit of passion. He died in a fit of anger. Fear will cause the blood to run cold, the face to turn pale, the heart to almost stop or run off, and has even been known to produce death instantaneously.

There is no pain so severe but what some emotion can at least temporarily inhibit this sense. I firmly believe that a large amount of the rage and wrath of this world is due to certain conditions of our body which act as stimulants to the centers which cause these outbursts.

It is more important for the young girl to learn how to cook and be tidy than it is for her to speak French or be an artist in many lines. Alcohol has been rightly accused of being the cause of many wife-beatings, but did you ever stop to inquire as to the cause of those not due to alcohol? Irritable temper is given as the cause. But why the irritable temper? It is a natural part of man's nature. By no means a torpid liver, poor digestion, overwork, worry and many similar ailments are the cause of many a crime and misery.

How well Portia shows the effect of the mind when she censures Brutus for his conduct:

“ But with an angry wafture of your hand
Gave sign for me to leave you. So I did;
Fearing to strengthen that impatience
Which seemed too much enkindled and withal
Hoping it but an effect of humor,
Which sometime hath his hour with every man.
It will not let you eat, nor talk, nor sleep,
And could it work so much upon your shape
As it hath prevailed on your condition
I should not know you, Brutus ”

I am entirely satisfied that a large percentage of cases of illness will recover without any medicine; furthermore, we physicians know that many so-called diseases are entirely imaginary. These statements being granted true, what shall the patient or member of the family responsible for the care of the patient, do?

Shall we advise them to wait for nature to produce a cure or tell them there is no such a thing as disease and allow many a victim to die?

The duty of all concerned in each case is to call in a reputable physician who shall decide whether or not the patient is afflicted with a real disease. You say that many a physician will err in his diagnosis and that after

a long period of treatment many a case will recover without any medicine. Recovery in these cases is due to one of two reasons; either the patient has been ill or the patient has not been ill, but lacked the will power to throw off the shackles of a disordered imagination.

Drugs to a great extent produce their effect upon the bodies of those sick according as the physician believes in his treatment and the patient has faith in the physician.

In an old discussion of disease in one of the Oriental tales we find the interesting truth; discuss the symptoms of disease and you will tremble, fearing death; but turn your attention to the wonders of various remedies and you will think of life immortal. In another place we find a treatment frequently found efficacious. For skin disease, take three of Aristotle's categories, two metaphysical degrees, fourteen lines of Homer's Iliad, one line from the letters of Abbe St. Cyran. Write all these on a piece of paper, fold, tie in a ribbon and carry round your neck. A cure will result.

Dr. A. became convinced that the suffering feigned by Mrs. B. was entirely imaginary, and although she had been unable to get out of bed for months, he decided upon a novel method of treatment. The doctor got a few mice, and when the patient was not looking, he let them loose upon the bed and upon the floor. It is needless for me to add that the family were convinced by the way that she jumped out of bed and ran around the room that her weakness was not incurable. We are continually using similar but more pleasant methods in treating these diseases.

Some persons are so aberrant in their mental conditions that they can enjoy certain pleasures only by injuring themselves or by inflicting injury upon others. How many wives expect their husbands to beat them unmercifully, in order that their devotion may be shown? This actually occurs in some countries.

Many may laugh at the idea of taking bread pills, but I venture to say that most persons have taken them faithfully, and been cured as a result of the faith necessary. The physician recognizes that at certain times drugs are harmful, and that the patient would be offended were he told that his disease is not real.

There was much virtue in the discordant noises of the "old Indian doctor" who beat upon his kettle drum to restore the sick. The history of witches in the early colonial times shows the state of mind which can be produced by allowing it to be concentrated upon such things. Have you ever witnessed the religious exercises of any of the fanatical sects?

I have seen persons so worked up during a revival service that they would jump over seats, put out the lights and cry out in the greatest agony for the Lord to rid them of the devil within them.

The medical man classes as a form of chorea or St. Vitus dance the so-called religious sects as the holy rollers, jumpers, etc. By what we mean, they actually become diseased in body in their worship.

Is it possible for the will power to conquer all kinds of disease? This

question has called for much discussion—so greatly, in fact, are the people interested that we have large bodies of people calling themselves religious denominations, based upon the power of the mind or by the influence of prayer to cure disease. As stated before many of the persons cured would have recovered and many were not ill. Have we forgotten the thousands of persons treated by a certain Divine Dowie, now deceased, and the sect almost forgotten in a few years? I make the emphatic statement that many persons were cured of disease by Dowie. Many are being cured by other religious societies uniting faith and prayer. I go still further and say that I do not believe that the prayer cured a single one of these persons, only so far as the prayer augmented the faith of the person under treatment.

Faith and prayer will not destroy the virulence of bacteria in our body when such a condition as cholera, smallpox, etc., exist. In 'divine healing' the mind is taken off the illness and placed upon higher things.

"Failure is due to lack of faith or 'Science' on the part of the sufferer."—*Quimby*.

"It (Christian Science) will fail when it shall have served its purpose."

Our will power can assist nature much; the patient with a cheerful disposition, in a bright, airy room, with pleasant nurses and a physician looking on the bright side of life will recover much more quickly than the one with the opposite conditions.

There has been devised an instrument so delicate for balancing the body that when a person is placed upon the balancing board, and for any reason the blood rushes to the head or limbs, the change of blood to the part will cause the head or feet to rise. When a person thinks of dancing, even though he does not leave the board, the blood will pass to the limbs as if in the exercise and the foot end of the board will be lowered. Remembering this, it is not necessary for me to mention further conditions tending toward improvement which may be produced by the aid of the will power. Certainly man is fearfully and wonderfully made.

In a recent book entitled "Insomnia and Nerve Strain" I find the statement that disease of a dental nature, involving no pain whatever to the victim, works its havoc and leads men and women to the madhouse, domestic miseries and every kind of excess. We demand as far as possible for our happiness and domestic and social felicity, as nearly a healthy body as possible. Excesses of all kinds should be interdicted, we must have faith. Even Paul said, "What good I would do, I do not, and what evil I would not do, I do."

An Ancient Mariner caught in a storm at sea exclaimed thus to Neptune:

"O God, if it is thy will, I shall be saved! and if it is thy will, I shall be destroyed! but I'll steer my rudder true."

"It is the mind that maketh good or ill,
That maketh wretch or happy, rich or poor."

DISCUSSION.

Dr. W. H. Haines: Our guests and members of the Odontological Society. The subject of Dr. Rhoades' paper "The Effect of the Mind Over the Body" is a very extensive one, and I appreciate the difficulty of the essayist in trying to cover so great a subject in one short paper and I congratulate him in the able manner in which he has presented it to us this afternoon.

It has long been an acknowledged fact and has been demonstrated in practice and numerous ways, that a great many of the ills of our bodies are mere illusions of the mind. Such patients are spoken of as being "hipped" on such and such an ailment.

The essayist says he is firmly convinced that the mind and body are one and the same, and that a muscular contraction and a thought are but different manifestations of the one and the same entity. That the mind is not confined to the brain alone, as most of us believe, but rather "the mind extends over the entire body" as well. The cells composing the different glands of our bodies which supply the nourishment to that particular part and exclude the waste and poisonous particles from the same, are called the "thinking cells." Therefore, to treat a patient successfully one should first gain the confidence of the patient and get his mind in the proper condition so that the "thinking cells" of the parts affected can perform the duty imposed thereon.

The subconscious mind is a great factor in the subject of the effect of the mind over the body and is the storage or source of supply of the conscious mind. What we term memory is stored away in the subconscious mind. What we learn from day to day is the source of the supply. Upon the subconscious mind rests all the marvelous aptitudes of our nervous system. The mere facts of memory are sufficient to justify the conception of the subconscious mind. Telepathy, hypnotism and mesmerism are still other forms of the influence of the mind over the body, and any one of these subjects would make a paper in itself, so I cannot enter into a discussion on these different branches of the subject before us. When we take into consideration that the conscious mind of a well educated man contains only about one millionth part of his mental possessions, we can readily see what a vast storage plant lies within us.

In speaking of the animals we do not usually speak of the mind but rather refer to the instinct of such and such an animal. The higher qualities of man takes the place of instinct which we call intuition.

Many of the ills of which we are afflicted are caused and controlled by the condition of our minds. The effect of fear, anger and joy all have their influence for better or for worse as the case may be.

A true illustration of the effects of the mind over the body is in the case of a woman who imagined she had turned to glass. This seemed so real to her that her physician and friends could not convince her that this was not the case. She insisted that they handle her as though the least jar would cause her to break into small pieces. Upon the advice of the physician and against the wishes of the patient she was placed in an ordinary wagon without springs and driven rapidly over a rough country road, the woman meanwhile declaring she was being broken to pieces; but by the time they returned home she was thoroughly convinced that there was no glass about her anatomy. The cure was complete, as she alighted from the wagon and walked into the house of her own free will.

In the treatment of different diseases and especially of nervous diseases the influence of the mind is a great factor in the recovery of the patient.

In that test of the producing of the gastric juices without food, the stomach was susceptible to the change produced before the food was there, therefore the flow of the gastric juices when the different foods are taken into the mouth, and also I would like to ask Dr. Rhoades if he thinks it is wrong to develop children's imagination along healthy lines, such as imagining plays and things of that kind.

Dr. W. A. Price: I had for a patient a young woman who was of a peculiar

excitable disposition. She had only one root remaining and as I attempted to extract it she objected to it so strenuously that I got provoked and after that I had this experience of which I speak.

The root was perfectly sound, and I used cocain. The telephone rang and I stepped into the front office to answer it. As soon as I returned I noticed that something was wrong, the woman had taken to twitching and from that on she simply passed through a very violent stage of hysteria, so severe that it took all the power that I and two other gentlemen had to hold her on the couch.

Finally, by the administration of a large dose of bromide we got her quieted and on examination by a reputable physician, we were assured that there was nothing wrong, but she was afraid of the administration of the cocain.

Another case in point was that of a certain physician who went into a room where they happened to have a coal fire and coal fire implements, and saying nothing about what he was going to do, picked up the poker and stuck it into the fire. He said to his patient, "You can get up and walk." She said, "Doctor, I can't, I simply can't."

He said, "That's all nonsense." He crossed the room and said: "If you don't get up I will burn you," and started towards her with the poker in his hand. She got up the next minute and walked as well as any of us.

Dr. Rhoades: (Closing the discussion). I firmly believe that a large amount of the success of the physician is due not so much to what they know they can do, as to the manner in which they do it. Very much more depends upon the conduct and ingenuity than upon the scientific learning and the skill of the physician.

Many patients are lost by the inability of the doctor to handle them with an understanding of the effect of the mind over the body, and I know of many cases today where men of inferior ability are treating some excellent families. They don't take into consideration whether the doctor has ability or not, but simply from the fact that they are liked, they wield this influence over their patients.

I feel very gratified with the flattering comments on my effort and in regard to candor I believe everything that you said.

This morning a lady that I met on the street said to me, "Doctor, we are very hard up now, two of my children were very sick last week and I wanted to call in a physician, but I could not afford to."

I said, "How are they now?"

"Oh, very much better." They had no physician and they got well in spite of not having one.

I had a patient who had Locomotor Ataxia—and still has it. He went to the Christian Science Belief and I met his wife the other day and as she was talking with me I asked her, "Doesn't he get the pain any more; doesn't he have the trouble as he used to have it?"

She said, "Yes, he has it occasionally."

"Does he go over and take the treatment any more?"

She said, "Yes, once in a while."

"How about the pain?"

"Well, once in a while the pain hurts so bad that he wants some of that medicine you used to give him, and I go and get it for him."

So you see, once in a while he still resorts to his medicine when the pain hurts so hard. The medical man and the dental profession will go on letting them alone, as it will not do to go after them and say, "Don't do this, or that," and if we have not got the goods to put up ourselves, let them go.

Answering the question in regard to gastric juices, I will state that anything taken into our mouth, no matter what, calls for a certain amount of secretion, in the stomach, but there are glands in the mouth as well; it depends upon the kind of secretion, some of the kinds of food requiring a large amount of secretion and others but a

small amount, it depends upon how much the glands are stimulated by what we take into our mouths. If we have very great exertion there is but a small amount of secretion because they are thrown out as they are made by nature in quantities as needed, and dry starchy foods will call for fresh gastric juices, consequently starchy foods are allowed to continue in the stomach for a longer time. If we eat food in a large amount there will be more secreted in the stomach than if we ate in smaller quantities.

In regard to training children's minds, that is a very practical question, but I believe if we can be convinced that a delicate child is helped and made stronger by listening to our imaginary plays, that is what we should do. The results always tell how long to continue with certain treatments. If the results are not what we would desire, do not continue. The results should always determine the nature of the treatments.

PORCELAIN INLAYS AND CROWNS UP-TO-DATE OR WHAT WE OWE THE PORCELAIN ENTHUSIAST*

By George F. Woodbury, D. D. S., Cleveland, Ohio

THE DAY of "I-told-you-so" in porcelain inlay work is at hand, in fact it has been here for some time. What does it mean? It means that what the extremely enthusiastic operator predicted and hoped for the porcelain inlay has not been fully realized, and the carping critic with his atrophied power of appreciation and odium "I-told-you-so" is grossly enjoying himself. But all the hue and cry of this fastidious individual does not and cannot eliminate the porcelain inlay from a place in dental operations.

Perhaps you have heard the dogmatic assertion that the porcelain inlay has come to stay. Aye, it has! And when placed in its legitimate field by competent hands is a permanent, esthetic, sane operation.

We could get along without the "I-told-you-so" man and be better able to maintain our self respect; for sometimes he tries our patience beyond the holding point,—something lets go, and we are sorry. While we could well enough spare this fellow, we cannot get along without the sincere enthusiast; even the extremist is a boon to our profession. He is a man we should encourage and honor, not despise and hinder. We owe a debt of gratitude to the conscientious extremist, and instead of belittling his services, let us offer him our heart and hand.

How many of the best things we have in dentistry today are the results of the hobbyists labors?

Maybe this visionary has gone beyond the range of conservatism; maybe he has made exaggerated statements; maybe he has led us to attempt some operation wherein we have failed. And while we are inclined to blame him for (in our estimation) attempting the impossible, was it really his fault we failed? More likely it was our failure to understand, and lack of skill to perform the operation.

I am not an extremist, I am more inclined to be a conservative, but

*Read before the Odontological Society of Western Pennsylvania, March, 1909.

I like to give the extremist full credit for his persistent labor and uncomplaining sacrifice. For I fully realize, and I want you to realize it, too, that because of the porcelain inlay idealist's persistent and exhaustive experiments, the inlay has a larger range of usefulness than it would otherwise have had. To be sure, many of his claims for the porcelain inlay were delightful dreams, and many of his operations failures, but notwithstanding all this, the application of the inlay covers a larger field than would have been made possible by the conservatives,—“stick-to-the-old-method” man. Why? Because the hobbyist tried porcelain, hoping for success, in many places the conservative man would not have dared venture. Again and again an operation failed, but at last the technique was solved and success crowned his efforts, and the inlay's usefulness was extended.

I do not want my enthusiasm for the extremist to be understood as confined to the porcelain art; we must pay him tribute in every important field of dental mechanics and science.

The porcelain inlay story is paralleled by the history of crown and bridge work, Bonwill's “Scientific Method of Articulation; Prophylaxis, Cataphoresis and Orthodontia.” While now we are trying conclusions with silicate cement, and can at the present moment predict quite accurately its history,—lauded, applauded, abused, condemned, discarded, reinstated, established,—and the progressive man will find it indispensable in a limited field.

Turn any where you will to any enterprise whatever and you will find the advancement of that enterprise signifies a crank back of it. There are two classes of this species! The sincere unselfish hobbyist, and the selfish, eccentric faddist.

The unselfish hobbyist devotes his time and gives his energies for the good of the profession. But sometimes in his enthusiasm he injudiciously proclaims the result of his labor before it is established as good practice. I designate him as unselfish because he works often times under great stress, without the approval and encouragement of his fellows; and when he has worked out the problem, gladly gives the result to the profession, rejoicing that he has been able to contribute something to the work he loves.

The other fellow, the selfish faddist, has enthusiasm, but it is self-centered. He makes a fad of another's discovery for the despicable purpose of attracting attention to himself. He never spends any energy working out anything for himself, but just as a vulture swoops down upon her prey, he dashes upon a new idea and appropriates it to his own selfish end. If he ever made a valuable suggestion, no matter how trivial, toward the solution of a problem, when he found out it has been used he claimed the credit for originating the whole scheme. He makes much ado about new scientific methods, only for the purpose of making others think he is it. He does not care for the profession any further than it serves his purpose. Down in his heart he is selfish, greedy, a parasite! Let us ignore him!

All honor, then, to the unselfish extremist; a glad hand to the sincere hobbyist, and unstinted praise to the worthy idealist!

To some it may seem like a waste of time to spend so much energy in a tribute to a fanatic. But he is the best friend the profession has, and it seems to me we are only performing a delayed duty.

Now that we have cleared our conscience let us turn and consider for a few minutes the result of the porcelain idealist's labors. I said in the beginning the porcelain inlay placed in its legitimate field by competent hands was a permanent, esthetic, sane operation. And while there may be an honest difference of opinion about the extent of the field, I take it we will have no serious trouble to get very close together. While my experience with the porcelain inlay does not extend over very many years, I find it occupying such an important place in my operations I cannot do without it.

I have some porcelain inlays in the bicusps and molars that are giving entire satisfaction. In short, they are as successful as any I have placed. However, I do not think that I can include them in the legitimate field; they are in the exceptional class. To my mind the gold inlay is indicated in most of these cases. The six anterior teeth, upper and lower, must be the circumscribed field for porcelain inlays, generally speaking,—there are exceptions, of course. Strange as it may seem to many of you, it is nevertheless true, I have placed the greater number of my inlays in the upper anterior teeth, involving the approximal surface and part or the whole of the incisal edge. And to my surprise and gratification the percentage of failure in these cases is no greater than with the foil fillings placed in cavities involving the same field.

Dr. W. A. Capon, of Philadelphia, than whom there is no better or more trustworthy authority, gives a good idea of the serviceableness of the porcelain inlay in his own practice in an article on "Porcelain After Eighteen Years," in the *Dental Cosmos* for September, 1908.

The porcelain inlay enthusiast has done more than determine its usefulness and set a boundary for its service. He has developed a principle of cavity formation that is ideal, not only for porcelain but for gold as well. Also many of our best men, to whom we are greatly indebted, have devoted considerable time to cavity formation for the inlay, and by so doing they have helped solve a perplexing problem for us. Cavity formation has been the solution of the inlay enigma.

While so many of you are familiar with the best methods in porcelain inlay technique it will be out of place for me to go into detail, but let me, in a few words, summarize, and in so doing emphasize, what to me, are a few of the chief points in successfully constructing a porcelain inlay.

In constructing your inlays I am persuaded you will be happier if you will religiously shun the example of the foolish man: He built a house upon the sand, without a foundation; it fell, and great was the fall of it. But follow the example of the wise man, who also built a house: He digged

deep and laid the foundation upon a rock, and when the storm came and beat vehemently upon the house, it was not so much as shaken, because it was founded upon a rock.

Verily, I say to you, if your inlays are to withstand the stress of mastication there must be a broad, deep foundation. The cavity must have an adequate gingival seat; square base, labio-lingually with slight incline root-wise as it approaches the axial wall. In upper incisors and cuspids there must be a labial resistance seat properly formed to furnish sufficient strength against the stress of mastication. The cavo-surface angle of the margins of both the cavity wall and the porcelain inlay must be at right angles,—never acute angles. Next comes a good matrix; a puncture, except on the margins, does not matter. While baking, support your matrix on a bed of powdered silex in the tray; bring up to the fusing point slowly. Do not glaze until the final baking. Remember, large inlays require more time to glaze than small ones. When you have removed the matrix from your inlay make the cavity surface rough, either by grinding with a stone, hydro-fluoric acid or cut small grooves with a proper shaped knife-edge stone. Cleanse thoroughly with brush and water and rinse in alcohol or chloroform. Use a good cement, hydraulic preferred, white, pearl gray, or light yellow in color, mixed to the right consistency. Learn how to mix it. Force your inlay to place with a piece of tape, wide enough to cover the inlay, drawn toward the seat of resistance. This tape exerts even pressure on your inlay and at the same time wipes the excess cement from the joints, which is better than breaking it away or even polishing after the cement has hardened.

This epitome has dealt entirely with the mechanical side of the porcelain inlay. There is another, a very important side, the esthetic, which is governed entirely by the artistic ability one possesses. The selection of shades depends largely upon the individual skill, which, if not inherent must be patiently acquired.

I believe, all things considered, you will get the most esthetic results by using a high fusing porcelain; one fusing at not over 2300 degrees F. A low-fusing porcelain can often be used to advantage in labial cavities where opacity is needed. I prefer a porcelain with foundation body, and enamel, fusing at different temperatures. Use the foundation body to strengthen and stiffen your matrix, followed by the lower fusing enamel in which you produce your shades to finish with.

Believe me, porcelain is worthy of your careful consideration and earnest effort to learn to use, and to occupy a permanent place among your standard filling materials.

Listen! Be patient, persistent, practical; you will fail a good many times,—it is no disgrace. On the other hand it is significant; it proves that you are a human, not a freak. Failure means success ultimately—if you are not a quitter. No one has yet mastered porcelain technique; don't be discouraged; try it; work for it; stick to it!

DISCUSSION.

Dr. Burt: I believe porcelain is here to stay and has its place as surely as gold or any of the other materials. There are three points to be considered, the cavity, the formation and the maintenance, taking them up in this order, I agree with Dr. Woodbury as to the legitimate use of porcelain.

I consider porcelain to be the ideal filling for labial surfaces, because there is less danger in taking the impressions except, perhaps, in the third molars where it is more perishable.

We do not expect a porcelain filling to undergo the same amount of wear as a gold filling. For some people who are very particular about having any metal show where it is essential to get strength on account of the depth of the cavity, I think it is preferable to use it on account of its rigidity.

Dr. W. L. Fickes: My friends know that I am hard to convince against my preconceived judgment on any question under discussion, but I wish to say that had I written this paper myself I could not have agreed more fully with every point which the writer has brought out.

I am glad to hear such a paper because of the fact that many men who have been unable to produce satisfactory results with porcelain have commenced to knock the material. I think that those who have succeeded are more enthusiastic about it than ever. It is a material which will not disappoint a man if he is able to carry out all the essential points. It is work which requires care and skill. It requires more care than any other class of dental work. It is not so much the man's experience as it is his great care which makes him successful with porcelain. I know of a number of men who produced excellent fillings of porcelain the first time they tried it; I know others who have tried the work for years and have never succeeded in producing a perfect piece of work.

There is one point which I wish to amplify. I think that many failures have been made because the manufacturers of porcelain bodies give instructions to bake them in so many minutes and the time allotted is not long enough to develop the full strength of the porcelain. If the best porcelain bodies on the market are properly fired the result is a material fully as strong as any teeth on the market, and porcelain teeth are as strong as amalgam. I made that statement to a dentist not long ago and he ridiculed the idea; but I believe that you will be surprised if you carry out some experiments by properly baking dental porcelains and testing and comparing the results with amalgam. I have produced some samples which stood up under the most severe tests. Porcelain should be fired for a long time at a low heat.

Dr. W. H. Haines: I have listened very attentively to the paper and while I have been using the porcelain, I guess just about as long as any one here in this city, I am still using it and don't see how I could possibly criticise his methods as they are so good and I can hardly see any improvement for them, as far as he has shown us.

But as to criticising the crowns, I think he should have nothing but praise for bringing forth and developing the crowns to such an extent that we can put better crowns on a worse root than we had ever hoped to be able to do before.

I have used the saddle back tooth and I have also used just the plain vulcanite tooth, casting directly to the tooth without backing, with great success. I am convinced that it is quite as durable, if not more so, than any other material we have, and there will be less of facings jumping off with this crown than by using the ordinary crown of porcelain facing.

Dr. Robinson: In listening to the introductions to that paper, it struck me how true it is that we are indebted to the faddist and the enthusiast, for from them we get our new ideas; from them we reach the perfection that we seek to attain, and it is only too frequently, as the essayist said, that they are made the butt of our fun and

laughed at, yet we find ourselves the very ones later to make use of the very ideas they put forth, claiming them as our own.

It is the crank who keeps the machinery moving. That is the only portion of the paper that I wish to say anything about and it is one that cannot be too strongly impressed upon any one at any time who seems to be criticised because he is an idealist.

Dr. Fickes: I think it was Dr. Head who said that if the joint were not more than 1/1000 of an inch in width the cement would not dissolve out to a depth greater than the width of the joint because of capillary attraction. This is true if you do not confine air between the inlay and the tooth. If air is confined between the filling and the tooth, capillary attraction will force the fluids of the mouth into the air spaces and the cement will dissolve out.

Dr. J. D. Whiteman: There was one statement made by Dr. Burt, that he regarded the porcelain inlay for labial surfaces, as ideal. I will concede that it is better than anything else we have for that location, but until we can overcome that unsightly black line at the margins it is far from ideal. Perhaps Dr. Burt has some method by which he overcomes that condition and in that case I would be glad to hear from him concerning it. As to the prelude to Dr. Woodbury's paper I think he is exactly right. We have been entirely too zealous, I think, in the adoption of these new methods and materials as in many cases they have only led us astray.

TIN—TIN AND GOLD*

By F. J. Spargur, D. D. S., Cleveland, Ohio

THE profession of dentistry is justified in many ways. The pain, suffering and discomfort incidental to human existence are many and devious. The ability to relieve, even in small measure, some of the rough spots along the pathway to peace and contentment is a privilege, and a trust not to be lightly estimated. As a profession we find our greatest justification, perhaps, in the simple, everyday, more or less monotonous occupation of saving teeth in the greatest possible degree of usefulness and beauty. This is of first and most vital importance. Just in proportion as we are successful in doing this are we fulfilling our obligations to the profession and to our patients.

Placing artificial substitutes for teeth lost is of importance, too. Placing them artistically, restoring insofar as possible, the normal contour of the face, and the ability to properly masticate food. We are under a strict moral obligation to spare no effort or pains in these cases of replacement, for the toothless condition of many entails a long recital of inadequate, incompetent, careless dentistry. This, of course, is another story and would not be mentioned here except that it is desired to approach the subject of this paper with the idea that the principal reason for our being, in a professional sense, is the saving of teeth.

The wasting of tooth substance through decay in the greatest source of tooth destruction. No other one thing in the human mouth brings in its trail such serious results. It behooves us, therefore, to consider well which of the many materials and methods at our disposal will best serve to replace

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tissue lost, and most successfully withstand further ravages. Our problem is to restore to normal conditions; to make operations that are not of doubtful permanency even in approximal restorations where indifferent sanitary precautions are likely to prevail in spite of advice and effort on the part of the dentist. From the different materials and methods at his disposal the operator must choose that which is best for the particular case in hand. In this he is guided by the size, shape and position of the cavity, the state of the mouth and teeth, and the physical condition of the patient. The ability of the patient to make proper financial remuneration without working a hardship is an undesirable, but nevertheless, necessary consideration also. Lastly, it is our duty to give heed to the amount of pain and discomfort involved, for these things are of very great importance from the patient's viewpoint. The writer takes the stand, however, that it is a mistake to sacrifice thoroughness to the comfort of either patient or operator, except, of course, in certain conditions, well known. The easy way is seldom, if ever, the best way. Yet the writer has, on several occasions of late, heard this advanced as the reason, the real reason, perhaps, for the use of certain modern methods for filling teeth. Time alone will tell whether they prove easiest in the long run. Certain rules have a way of being constant in application. It is doubtful if an exception will be noted in this instance.

Many years of experimenting has not produced the ideal filling material. Good men may differ greatly regarding methods, but they are a unit, perhaps, on the proposition that any one material or combination of materials are not fully adequate or satisfying. If asked to name the method that, at this time, promises the most, many would doubtless say the gold inlay. We are a profession of enthusiasts, are we not? First porcelain, and now gold, inlays has taken us by storm, and for the third or fourth time in the last half dozen years the practice of filling teeth is to be revolutionized. Out of it all comes much that is good and stimulating. Each new method of merit spells advancement, progress. After the excitement dies away, it finds its legitimate place in practice, and the profession has taken a step forward.

The writer comes to you tonight as a conservative, with but a short story on a very old subject. Many of those whom he has the honor and pleasure to address this evening may know much more of the subject than he does. There will be no regrets if this is so. In any event he is convinced that no harm can come from going into it a bit together.

Tin has been employed in the filling of teeth for over a century. Its record has always been good, and today it stands at the head of tooth filling materials. Observation disproves the idea that it is universally or even largely used. In the opinion of the essayist, the reason therefor must be because its merits are not fully understood. Current dental magazines fail to make important mention, if indeed mention at all, of tin, or tin and gold in combination. Two of the most important literary efforts in the dental

field in recent years all but ignore the subject. This, gentlemen, is not because the fault lies in the material, but, rather, because those responsible for the section on Operative Dentistry had missed the light in at least one important direction.

One can be too conservative, perhaps, and yet in that direction lies safety. It is better to cling to those things that have stood the test of time than to rush blindly into things that we know not of. The conservative dentist has not forsaken his gold pluggers, nor will he until he is convinced, beyond a shadow of doubt, that something else is as sure and safe. Well made gold fillings have stood the test of many years. They have saved teeth in the past, and they will save them in the future. The writer believes that while much can be said in favor of gold, still more can be claimed for tin. As a tooth saver, gold's opportunity is greatly increased if it is combined with tin in some form, preferably in what is known as the "combination filling," from one-half to three-fourths tin—the remainder gold. The writer has never had experience in the use of tin and gold in alternate sheets, being unable to see the advantage of so doing. Where soft gold seems indicated because of its adaptability, use tin. It is just as soft, just as adaptable and has advantages that soft gold has not. We hear of soft gold fillings that have endured for many years. They were made by men especially skilled in its use. Tin would have served as well, and the percentage of failure would doubtless have been reduced.

The writer does not hesitate to use tin in the anterior teeth; has done so for many years, in all classes of patients, all classes of teeth, and all classes of cavities, either as a cavity lining or as a part of the exposed filling. He has no cause to regret having done so, but does regret, some times, that he ever deviated from this course.

The most vulnerable point of approximal fillings in the anterior teeth is along the gingival margin. The same holds true of approximal fillings in bicuspids and molars. It is the writer's firm conviction, based upon careful experience and observation, that these margins, when protected by tin, offer far greater resistance to deteriorating influences than with any other material or method at our disposal.

There are reasons, of course, why we look upon tin as a superior filling material—reasons susceptible of proof. A few of them follow: It is peculiarly adaptable to cavity margins. Being from four to six times as poor a conductor of thermal influence and galvanic changes as gold, it is easily tolerated in sensitive conditions. The formation of tin oxid serves as a preservative, the oxid possessing, doubtless, germicidal tendencies. Tin is more rapidly introduced and condensed than gold, thereby greatly reducing the tediousness of large operations. Tin readily lends itself to thorough burnishing and finishing in places difficult of access. In combination with gold, probably through galvanic action, tin assumes a much harder condition than normal, and, also, through the same action, becomes so strongly adherent to the gold that it can only with difficulty be separated from it.

In volume three, page fifteen of the "Transactions of the Fourth International Dental Congress," held in St. Louis in 1904, a gentleman from out of the west is made to say, among other things, that tin destroys pulps. The writer would like to see the death certificate of a specific case with the real cause of death noted thereon. He has his own idea of the sort of manipulation necessary to make tin produce so dire a result. A large sized colored gentleman is lurking somewhere in the vicinity of that statement. Tin does not cause the death of pulps if used intelligently. It is less irritating than gold. Oxid formation in the base of the cavity is protecting and beneficial.

The essayist assumes that the technic of working tin is well understood, and he will not enter into that farther than to say that the ability to take infinite pains is a factor as necessary to the successful working of tin as anything else. Tin foil of the best manufacture is preferred to other preparations. A matrix should always be used in approximal work, being always careful that the matrix is not too closely adapted to the tooth; it being desirable that a little space be left to insure a perfect covering of the margin. It is good practice to introduce a thin mat of tin between the matrix and tooth, firmly adapting the same to the floor of the cavity and over the margin after the wedge is in place. While we can safely count on a union between the tin and gold, it is desirable that this be not depended upon to retain the gold, but that it be anchored in the tooth. As large a quantity of tin as is consistent with appearance and anchorage of the gold should be used.

Without extending this paper to too great a length, the essayist cannot touch upon other valued uses of tin in filling operations. He trusts that this may be brought out in the discussion.

The essayist feels that in the endeavor to stimulate the use of tin, he is stimulating good dentistry. He thanks you for the privilege of presenting his plea here.

DISCUSSION.

Dr. W. H. Whitslar: I have made gold inlays, and experimented with them, but have never found anything that will preserve the tooth as long as gold fillings with tin.

I have never seen half a dozen fillings fail with gold and tin. You can fill some good teeth carefully and scientifically and they still fail. There are no teeth so good as perfect teeth.

I was much interested in Dr. Spargur's paper and the discussion of it and have learned much by listening to it.

I was very much astonished recently on looking over a new work to discover that so little of it was devoted to the use of tin, and on speaking to the author, I said to him: "Why in the world did you devote only two lines to the use of tin? I believe in the use of tin, don't you?"

He said, "Yes, I believe in tin."

Now, in another work, speaking of gold and tin the author says it is of doubtful utility as a base for fillings. Think of that and think of those two volumes being issued with so little about tin. I want to say there is no filling in the world that will preserve the teeth like gold and tin filling.

I have had the pleasure of having had something to do towards assisting Dr. Spargur in his preparation for our profession, and I am proud of his ability as an operator. Many men could do better with tin and gold than they are doing now if they would only give it a trial.

I believe that inlays can save teeth and are doing it, but that they cannot preserve the teeth as long as tin does.

Dr. Katz: While it is probably the best filling used, since the gentleman has brought up the question of what the patients say or what they think about it, we must get away from having patients sit in the chair any longer than is absolutely necessary. In many cases it is what will be the easiest for the patients that we must consider.

Dr. A. G. Rheinhardt: I am very glad to note that there is still some belief in the virtue of materials used in the past, for, although I would not class myself as an old practitioner, it pleases me greatly to see that the old and tried methods are not entirely discarded.

I think the principle thing we need most, at the present day, is good judgment.

A patient once asked me, "What is the best filling material?" and I jocosely answered, "If I thought that mud was the best—I'd use mud."

In my opinion, we need judgment to discriminate as to the character of the filling which will attain the very best result in the conservation of tooth structure, regardless of the opinion of the patient.

Of course, we all know that they think there is a sign over the door of the operating room, bearing the motto—"All hope abandon, ye who enter here," of which we have heard, but we should seek to disabuse their minds of this and impress upon them that our ministrations will be governed by the most careful judgment of their needs.

Dr. J. D. Whiteman: I have scarcely put in a gold filling for the last fifteen years without using tin at the lingual and gingival third if it were at all practical.

A patient will sometimes observe that I am not using gold and will ask me if I do not intend to fill this cavity with gold, I answer, yes, all that portion that will be exposed, but there is one point which is especially liable to decay and at that point I will use tin.

It might not decay with gold, but with tin I know it will not. I have never seen a single case where decay had taken place around tin if the cavity had been properly extended.

Dr. Spargur: (Closing the discussion). I thank you, Mr. President and gentlemen, for the kindly manner in which you have received and discussed my paper. The wish was to create an interest in a valuable and to some, I am forced to believe, little known filling material. I am pleased to think that the effort has, in some degree, been successful. Those who are skeptical of the value of tin as a tooth-saving material would be convinced of its merit, I am sure, after thorough test and observation.

I am grateful for the note of conservatism struck by several in discussing the paper. Particularly pleasing were the words of your worthy President. It is good to know that the tried and true are not following strange gods blindfolded.

In conclusion I wish to venture the assertion that he who temporizes with thoroughness either at the instigation of his patient or his own inclinations faces a day of reckoning when explanations will be difficult and embarrassing. If the filling fails the patient is likely to remember but two things, viz., that the operation was made by you, and that it is a failure; all else is forgotten.

THE TREATMENT OF CHILDREN'S TEETH*

By E. L. Pettibone, D. D. S., Cleveland, Ohio

THE great discoveries and advances in dentistry within the past few years have aroused a desire to know more about the care and treatment of children's teeth, both by the laity and the medical fraternity. This is especially noticeable in the increased interest of the parents in the care of their children's teeth and their many inquiries about them. The interest shown by the medical fraternity is noticeably evidenced by the recent examination of our school children's teeth by the board of health through the district physicians. The result of this meager examination—the finding that 79% of the school children were in need of dental services—should arouse every dentist to greater interest in children and more painstaking efforts to reduce the great amount of suffering that *must* accompany and follow such conditions.

We should express a desire to see the child at an earlier age than it has heretofore been the custom of the parents to bring children for examination; this should, I believe, be not later than the fourth year. The parents as a rule appreciate the information you have to impart about the advent of the first permanent molars and are glad to know that the child should begin so early to clean its teeth, that there is a special brush for the youngster, and that the preservation of the deciduous teeth means so much for the permanent set.

Nearly every magazine article or text book treating of the management of children in the office puts considerable stress upon the importance of the impression obtained at the first visit, but, after all, the successful management of children depends upon the ability of the operator to make a psychological study of each individual child; to so interest and impress the child that we may be able at any time to do the required work for him, to acquire the child's friendship, respect, and co-operation. I believe that the principal object of the first visit should be to eliminate the "parent question." This can be done by offering to relieve the parent of the "responsibility" which many feel requires their presence while we are working upon the child. This I find can be most diplomatically done by suggesting that a playmate can come with a child—that fear of ridicule from a playmate is greater than the fear of the dentist—and further by suggesting that the only time satisfactory and available for the treatment of children's teeth is Saturday morning. I reserve Saturday mornings for children exclusively, not only because of their not attending school that day, but because there are very few "fond parents" who can spare the time to visit the dentists Saturday morning with a child. When the child is presented during the week I only do what relief work is necessary to tide the

*Read before the Cleveland Dental Society, May, 1909.

patient over until Saturday. This usually consists of the application of Fletcher's Carbolyzed Resin, oil of cloves, or some other essential oil.

The first visit should be the occasion also of a general examination of the physical condition of the child. The dentist with his medical college training has the opportunity right here to do a considerable amount of good very often by giving a few words of advice to the parents.

Above all, do not neglect to find out whether the child is suffering from adenoids, enlarged tonsils, polypi, or catarrh. These conditions not only cause reduced physical resistance to disease, but they cause those conditions which we dread so much—nervousness, irregularity, decayed dentition, etc. The percentage of children with these conditions is very high here in Cleveland. I found it to be about 15% among the children whom I treated last year. Dr. Rosenwasser tells me that they operated for adenoids upon 47 at the Jewish orphanage last year. The average attendance is 500.

I believe if these cases are cured by surgical treatment that we find we have no problem in the handling of children worthy of our consideration here tonight.

I believe that pleasant conditions should surround the child whenever he comes to our office, that the assistant should not only know and like children, but should know how to interest them. I believe we should not only interest them in what we are doing, but that we should be interested in what they are doing, at school, at home, at play, their ideas for the future, etc. We should treat these patients with the same consideration as our adult patients. This applies to cleanliness, sharpness of instruments, fairness, and surely to the quality of our work. Do not injure their esthetic ideas by inserting an ugly black filling "that looks like coal" when you can with a little more patience and a little more work give them something better.

The youngest children requiring treatment are usually mouth-breathers whose deciduous incisors are decayed on the approximal surfaces. These I fill with an hydraulic oxy-phosphate cement, matching the teeth as nearly as possible. These may involve so much of the incisal angle as to make it impossible to fill permanently with cement, in which case I do not hesitate to resort to the gold crown or platinum band to hold the cement in place and thus to help the little youngster to use these teeth until the permanent ones are ready.

Next the deciduous molars require our attention. Where they are hyper-sensitive, but not exposed, I insert a temporary filling made of oxy-phosphate cement mixed with a very little oil of cloves. For this I use a cement that is easily removed so that I can remove in two or three months and insert a permanent filling.

Where there is an exposure I remove the pulp with cocaine, being very careful of the amount of pressure used, and the following week fill root canals with gutta-percha.

I believe that arsenic should never be used in the treatment of deciduous teeth.

In the past the premature extraction of deciduous teeth because of the death of the pulp was principally due to the fact that it took too long or was too much trouble to treat them. In view of the havoc wrought with the permanent arch by this premature extraction, I believe we are doing a great injustice to our little patients if we ever extract them before the proper time.

The treatment which I employ and which I have found by experience to be successful in the treatment of putrescent pulps of deciduous teeth is a modification of Dr. Buckley's treatment of permanent teeth. For this I use Dr. Buckley's second formula which is one-third formalin, two-thirds cresol.

My method is as follows:—Isolate tooth, preferably by means of cotton rolls held in place by clamp, having first applied 10% solution sulpho-carbolate of zinc to partially anesthetize the gums, sterilize tooth, remove decay and any remains of pulp, wash out cavity and seal in the cresol treatment. When I say seal it in, I mean seal it in with cement so that when your little patient comes back in one week, the treatment has been working and working not upon the tongue, but upon the portion of the tooth for which it was intended. There are several kinds of cement which can be inserted quicker than temporary stopping and which help to make your operation positive. At the next visit I remove the cresol treatment, thoroughly sterilize the root canals, and fill with medicated gutta percha points and gutta percha, and at the next visit insert permanent filling.

I want to add here that I have found that where there is any soreness apparent, that I have had universal success by preceding this treatment by a treatment of a paste which is made as follows:

R Paraform, v gr.,
Thymol, v gr.,
Zinc oxide, x gr.,
Ol. Cloves, iij mm.
Glycerin, q. s. to make a thick paste.

M.

Many cases, too, require more than one cresol treatment to effect a cure.

I want to advise against trying to cure putrescent pulps or abscesses of deciduous teeth by merely inserting some paste or widely advertised abscess cure and then filling over the same. You may not have any trouble with the case again, but the patient surely will. Formalin cannot be left in these teeth for any great length of time without causing soreness.

For the permanent filling of deciduous molars I use amalgam, being careful to properly prepare the cavity so that it may be retained as long as possible. If the walls are frail or partially broken down I use a mixture of oxy-phosphate cement with a rapid setting amalgam, and then by the use of a burnisher am able to burnish the amalgam filling down in such a way as to entirely cover the cement. This gives practically an amalgam filling with

the added advantage of the oxy-phosphate to support the walls of the cavity. I use the matrix and pressure in filling these teeth just the same as if they were permanent ones.

Of course, tin, gutta percha, oxy-phosphate of copper, and gold are good and may be indicated in some cases, but I think for practical lasting results this filling has a far greater sphere of usefulness in deciduous teeth.

There is another class of cases which cause us considerable worry, and are most frequently presented by patients of from ten to fourteen years of age. These are cavities in incisors and cuspids which have been neglected and come to us in a very sensitive condition. Now, upon the treatment of these teeth at this time there is very frequently a great deal held in the balance. If we undertake to anesthetize by any of the various methods and fill at once with gold, we not only have a hard time doing this and quite frequently scare away the patient, but we are almost sure to have a large percentage of these fillings which will not stay in over two or three years. An important point, never to be forgotten, is to safe-guard our own interest as well as those of our patients' and preserve our reputations, so that I explain the unsatisfactory condition of the teeth to the patient and explain that my object is to get the tooth in its normal condition (I say to dry it out after the saliva has worked into it) before I fill it and explain that the first filling may have to be renewed. I find that after three or six months I can remove this filling and fill permanently with gold and that I can do it easier, with less pain, and with a greater certainty that it will not fall out.

Just another thought and this the most important—don't neglect to teach the children to maintain the highest degree of oral hygiene. Tell them what kind of brushes to use and show them how to use them, and impress upon their minds the importance of removing all remnants of food after meals, and tell them also of the beauty and benefit of a clean mouth, and clean teeth.

I wish to say in conclusion, gentlemen, that I thoroughly believe that the treatment of children's teeth and the management of our little patients, is, if we go about it in the right way and with the right spirit, the easiest and most enjoyable work among our many professional duties.

SOMEWHERE we have read: "Live each day as tho' it were thy last;" which certainly is most foolish philosophy, or no philosophy, rather. It were far better to live each day as tho' it were the beginning of a new life in an infinite series of lives, the foremost of which lies most remotely in infinity behind you and the latermost lies equally remotely in front of you. Live each day so that its place in your series may be a worthy one, may merit and sustain a place in the endless chain of living.

SOME PRINCIPLES OF RETENTION IN ORTHODONTIA

By Martin Dewey, M. D., D. D. S., Kansas City, Mo.

(Continued from page 602, August Summary.)

NORMAL PERIDENTAL MEMBRANE AND ALVEOLAR PROCESS.

In considering the tissues which support the teeth as a force in retention, some may think that I am overstepping the bounds of my paper. It is evident that the teeth are supported by the above named structures and in the majority of cases, the alveolar process develops to support the tooth according as the forces are applied to the teeth. Of course, the peridental membrane is that "membrane which covers the root of the tooth occlusally to the enamel. The fibers of which pass from the cementum into connective tissue supporting the epithelium, into the fibrous masses of gum, into the periosteum, into the cementum of the adjoining tooth and into the alveolar wall." This shows that the peridental membrane not only supports the tooth but it supports the soft tissue around the tooth and some of its cellular elements form the bone of the alveolar wall. This places the peridental membrane as the prime factor which has to do with the permanent retention of the tooth. If all of the other forces are normal the peridental membrane will do its part and a normal alveolus will result and the tooth will be permanently retained. Unfortunately we often find conditions which arise and make the end we wish to obtain impossible; sometimes as the result of conditions which we cannot govern and other times it is the result of our carelessness. Factors which we cannot control are those which arise in cases of lowered vitality, especially rickets. In such cases the bone formed will be of such faulty structure that teeth will not remain where placed. Those which we can govern, are those which arise, when we tamper with some of the forces which I have mentioned or so construct our retaining appliance that the natural forces cannot do their work; that is, so they cannot assert themselves. One of the most common mistakes is to make an appliance so the teeth will be held rigid; one that will support the teeth in every direction and not allow any of the force of mastication to fall on the teeth; constructing mechanical retainers so as to prevent the proper interproximal contact of the teeth, or hold teeth so the influence of the inclined plane becomes inactive. In order that the peridental membrane may perform its proper function, in order that the osteoblasts deposit and build bone as they should, it is necessary for the teeth to be used as they should. In other words, the proper force must be brought to bear on the teeth at all times.

NORMAL ATMOSPHERIC PRESSURE.

Another force which is difficult to classify, yet one that must be taken into consideration in the retention of cases, is the force of the atmosphere in respiration and deglutition. The air as it passes through the nasal cavity, filling all of the sinuses as it does, exerts a wonderful pressure in the course of a year. The pressure may be slight with each breath, but

when you add or subtract this force, during the growing period of the child's life, you will see what a difference it will make. Also, with each act of swallowing, we have the pressure of the tongue and lips plus the pressure of the air as a factor which play an important part in the retention of our cases. In order that we may get the advantage of the forces, we must be sure that we have a normal nose and tracts, as well as normal occlusion, but as this paper is not one on rhinology I will say no more on this phase, except to caution you that retention will be a failure unless you see that the child is receiving its supply of oxygen in the proper manner.

In summing up these forces of retention, I will try and show you the importance of them as grouped together in certain cases. Beginning with the last one, normal atmospheric pressure, we find that it is very closely associated with normal muscular pressure—so closely that if one is faulty the other is sure to be. If the nasal tracts are closed or not properly developed, abnormal muscular pressure will result, caused by abnormal breathing. In case of enlarged tonsils, we see the evil effect of long enforced voluntary muscular action, as the child endeavors to relieve the pressure and render breathing freer. It would be useless to expect retention to be a success as long as this abnormal pressure of the muscles and forced breathing were continued. No matter how long mechanical retention is employed, failure would be the final result.

As the cells of the periodontal membrane respond to any force which is brought to bear upon the teeth, it is evident that any of the forces of occlusion which are wrong, will also exert some evil influence upon the cellular elements and the "permanent retainer" will be faulty.

In considering the force of the interproximal contact point, the incline plane and the size of the arches, it will be necessary to step into comparative analogy to a certain extent so as to be able to show the various importance of each in different animals. Even in the same animal we find the importance of the forces changing during the life-time; that is at different ages, these forces will be of varying importance.

I have before spoken about the relation of the length of the over-bite, as compared to the length of the buccal cusps, of the molars and premolars. In the normal denture, the length of the over-bite should be the same as the length of the buccal cusps. This is the condition as found in the teeth before abrasion and wear has taken place. As the patient advances in age, and as the teeth are worn down, we find the wear of the molars and premolars is the same as that of the anterior teeth. This permits the "end to end" bite as described by my friend Dr. A. H. Thompson. It also accounts for the mistakes made by some who have thought because they found this end to end bite, that we had no normal occlusion. I have stated that the teeth were retained by the inclined plane and harmony in the size of the arch. As the cusp and the over-bite is worn off, it is plain to all that the force exerted by the inclined plane becomes less and less. The harmony

in the size of the arches is maintained and the interproximal contact becomes more important. In fact, as the influence of the incline plane is lost, the interproximal contact becomes more important until it is exerting more force in maintaining normal occlusion than the inclined plane. It would then be safe to say that the teeth are guided and held in place in early life by the inclined plane. When the dental apparatus becomes complete, the interproximal contact becomes an important factor and as the force of the inclined plane is lost, it (interproximal contact) becomes the greatest force which holds the teeth where they belong. In order that this changing of the importance of the forces of retention may take place, we



Fig. 12.—Note long cusps and absence of great interproximal contact.



Fig. 13.—Short cusps "decrease of cusps increase of interproximal contact." Wide interproximal contact.

have certain results taking place which we will consider. We can make this statement, which will be found to hold true in all animals and all individuals:

As the length of the cusp decreases the width of the interproximal contact increases. This change can be followed in the study of the human denture and in the study of evolution. In a well formed dental apparatus, one which has not been long used, we find the interproximal contact is but a point, also it is some distance from the occlusal surface of the

teeth. As the cusps and cutting edge of the teeth are worn off, the occlusal surfaces near the interproximal contact point until finally the contact point is near; and later at the occlusal surface. As the teeth are more worn, the contact point is reached until it is worn down and a greater surface of the teeth is in contact than was the case early in life. Instead of having but a point in contact, we have a surface. This increased surface holds the teeth in their proper place after the loss of the inclined plane. In order for this to take place the teeth are now "end to end" and the occlusal surface is smaller than it formerly was. Therefore, the relative importance of the incline plane and the interproximal contact as a factor in retention, changes during the life time of the individual.

I will give further proof of the statement, that as the length of the cusps decreases, the interproximal contact increases, or you may also state



Fig. 14.—Decrease of cusps, increase of interproximal contact.

it the opposite way as it works both ways. The point which nature seems to have in mind was, that if the tooth had a long cusp there was little use for a wide interproximal contact and vice versa. Fig. 12 shows the skull of a mountain lion, which may be taken as a type of the carnivora. Note the long cusp, good inclined plane and great "over-bite" of the canines. The teeth are held in place by the inclined plane, the wear is on the side of the teeth and not the tip of the cusp, so there will be no need of an interproximal contact during the life of the animal. Now we could follow this change from a long cusp with a narrow interproximal contact point through

the various stages until we reached the herbivora, but we will not take the time and I may want to write more on this subject later. Fig. 13 shows an antelope in which we find a short flat inclined plane and a wide interproximal contact surface. The teeth are almost square and can not be displaced except by great force. They are held in contact, approximally and not oclusally. In the beaver, Fig. 14, we find teeth which are still more flat and the width of interproximal contact is greater. In the incisors we find neither inclined planes arranged to hold them or interproximal contact surfaces, but another great force here steps in, the peridental membrane, Fig. 15, plays a great part plus the persistent pulp. The alveolar process is built around the tooth, the length of the root of the tooth is increased during the life of the animal and the tooth is held in place by the fifth force I have mentioned, without any aid of the others except the stimulating force exerted by use as a result of the muscles of mastication.

You, therefore, see the varying importance of the forces of retention and the manner in which they differ in different animals. You will re-



Fig. 15.—Note great length of incisor root which supports tooth. End of root is below and external to molar below.

member that I called your attention to the inclined plane of the canines of the carnivora being sufficient to hold the canines in position. In the herbivora, the canine is either lost entirely or is not a tooth of importance. In the rodents it is always absent. But in man it is different. It still is very primitive, the inclined planes have been reduced so they are unable to maintain the tooth in its position, and the contact points are so small that they have difficulty in keeping the teeth where they belong, and our only hope lies in being sure we take advantage of what forces we have or grief will often follow.

(To be Continued.)

THREE POPULAR DENTAL FALLACIES

By H. C. Sexton, D.D.S., Shelbyville, Indiana

FIRST FALLACY—THAT CEMENT IS THE BEST PRESERVATIVE OF TEETH.

THIS fallacy is a new one. We never heard of it until the inlay enthusiast, looking about for arguments for his own justification, formulated it and has since been preaching it most assiduously. In former years cement was considered but a temporary filling to be relied upon for six months or a year, but no longer. Since the margin of the inlay is still cement it would seem that its limitations still held to some degree, at least.

The inlay has been spoken of as a protected cement filling. The cement is protected, but the protection is at the point where it is least needed. Let the margins of a filling be made of gold foil, then fill in the center of your plug with cement and you have what reason might call a protected cement filling.

The assertion that cement is the best preservative of teeth reminds one of the old classic sophistry propounded by Montaigne:

“Westphalia ham makes one drink; drink quenches thirst; therefore Westphalia ham quenches thirst.”

The gold inlay is a great advance for the profession. It has come to stay because it has great merit, but its merit lies exactly in inverse proportion to the amount of cement exposed. The perfect inlay exposes none.

Then in advocating inlays let us not resort to sophistry. The inlay doesn't need it and by such usage we belittle our own intelligence. So when an enthusiast tells you that cement is the best known preservative of teeth just wink your eye and take his statement *cum grano salis*.

SECOND FALLACY—THAT THE PROFESSIONAL SPIRIT AND GOOD BUSINESS SENSE CANNOT GO HAND IN HAND.

Some men who have arrived at the age of forty-five or fifty without having laid by a dollar for their old age, take great pleasure in hugging this thought to their souls. It explains their failure in a most complimentary way; but it is a most deplorable fallacy—deplorable in that younger men may believe it and act upon its suggestion.

The man who at middle age or past faces the future years of his decline with no store of honey at his back, should not fall into the error of regarding himself as a martyr to the professional spirit. Let him be honest and acknowledge that he has been lacking in industry, concentration, or self-denial.

To save money requires often the highest powers of intellect and manhood. Weaklings are never savers. To succeed one must not only strike the iron while it is hot, but he must strike it often enough to make it hot. To do this requires will power of the highest grade.

The greatest genius that ever lived—Shakespeare—was an excellent business man. Let us not forget that. He relied upon a fortune that he had saved through toil and self-denial for many years.

No student of biography can believe that greatness of spirit, greatness of energy, greatness of heart make for failure, even money failure. They make for success every time. 'Tis folly to hold that richness of soil works only toward poverty of crops. Were it true, then the world were the devil's, indeed!

THIRD FALLACY—THAT QUACKERY IS A GREAT MONEY MAKER.

This fallacy is first cousin, nay, full brother, rather, to the belief that drinking whisky makes a strong man. Ask a surgeon which he would rather have for a patient in a desperate operation, a total abstainer or an habitual drinker, and he will tell you: "The abstainer every time." In like manner will the wise dentist say: "Give me an ethical practice, a practice in which all is honest, open, and above board: a practice of which I can be proud."

Quackery consists of claims to superiority or claims to cheapness or both. Now a personal claim to superiority, even if strictly true, makes of a man a snob; if untrue, it makes of him a liar. Between snob and liar let him take his choice. A claim to cheapness will in the end, sad to say, make of the claimant a cheap man—cheap literally, figuratively and professionally.

Either of these claims will drive the better class of patients away from you. The intelligent class will resent snobbery and lying. The wealthy class will resent cheapness. What have you left? The unintelligent and the poverty stricken. Would you not rather have your practice composed of the intelligent and wealthy? An ethical man may achieve such a practice; a quack never can.

Then, moreover, and mind this, quackery hurts the quack, hurts his very ego. You know a man cannot constantly tell or act lies without suffering degeneration in the very fibre of his moral being.

That is the worst of quackery. A man degenerates under it as he does under the drinking of whisky. It was of quacks that the man was thinking who said: "The more I see of men the more I love my dog."

But, you say, a man may make a great deal of money out of the less desirable people. If he can do so then it proves him a very, very, strong man. Most men go to pieces in the attempt. The quack who has had force and energy to be a financial success would have had a much greater success had he not been burdened with the incubus of quackery which, like the old man of the sea, has been slowly throttling him, bearing him down, down, down.

If this be true then why are a certain percentage of all professions, quacks, for even the ministry is not free, I fear. Oh! some men in the process of evolution have not yet arrived at the stage of thinking animals. So, why expect a man to think when in his make-up he does not possess the conveniences for thinking. In other words great truths are like mirrors, if an ass looks in you cannot expect an apostle to look out.

THE PROPER CONSISTENCY IN THE USE OF TERMS APPLIED TO LOCAL REMEDIES CLASSIFIED ACCORD- ING TO THEIR PHARMACOLOGICAL ACTION*

By Egbert T. Loeffler, B. S., D. D. S., Ann Arbor, Michigan

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CONSISTENCY or uniformity in theory and practice has been urged in every branch of the Dental Profession. Uniformity in the practice of crown and bridge work, uniformity in the treatment and extirpation of the pulp, uniformity in the practice of orthodontia, and uniformity in the preparation and filling of cavities.

The question of consistency or uniformity in the use of terms is equally important. There is nothing, it seems to me, that reflects so much upon the dignity of a profession as the haphazard use of terms. The last edition of the United States Pharmacopoeia gives a number of changes in the names of drugs. The reason for this is quite apparent; it is to bring about a greater degree of uniformity.

By consistency I mean an agreement with itself at different times. "Consistency in use," is the phrase to which I wish to call your special attention. When a term or word has been defined in a certain way, its use or application should always be made with due respect to this definition. Definitions, of course, are more or less arbitrary, but even when a term has been made, as it were, to mean a certain thing, this meaning or definition should be kept in mind when a practical application is made.

Let us take, for example, the word pharmacology. According to Professor Cushny, pharmacology is "a study of the changes induced in living tissues by the administration, in a state of minute division, of such unorganized substances as are not merely used as foods." I very much doubt the existence of any definition in all medical science that will compete with this one. There are several other terms, however, as physiology, pathology and bacteriology that have a similar meaning.

Pharmacology might, with propriety, be considered a department of biology and is, as has been suggested, quite closely related to other sciences included in that term.

As stated in that definition, the drug must be introduced from without because so many active agents are formed within the body itself that a study of the changes they induce belongs more appropriately to the department of physiology; on the other hand, an investigation of the effects produced by organized bodies introduced from without comes under the head of bacteriology.

The same consistency ought to be maintained in the use and application of other terms. Since the dentist is specially interested in topical remedies, I shall endeavor to confine my discussion to pointing out the lack of

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uniformity that exists in the application of terms generally used for such purposes.

As a first example of inconsistency, let me call your attention to the three terms, *caustic*, *escharotic* and *corrosive*. Dorland, in his new Medical Dictionary, defines them in the following manner :

Caustic—(1) Burning or corrosive; destructive to living tissue; (2) Having a burning taste. (3) An escharotic or corrosive agent.

Escharotic—(1) Corrosive; capable of producing an eschar. (2) A corrosive or caustic agent.

Corrosive—Destructive to the texture or substance of the tissue.

Here we can readily notice the great similarity of meaning—how one word is defined in terms of the other. They are to all intents and purposes synonymous. Webster says: "If no words are synonymous except those which are identical in use and meaning, so that one can, in all cases be substituted for the other, we have scarcely ten such words in our language. Words may thus coincide in certain connections and so be interchanged, when they cannot be interchanged in other connections."

The drugs and agents usually classified under the above heads differ so materially in their nature and action that it would seem wise to give each word used to designate them a different meaning.

To explain in detail this difference in action I cannot do better than quote from Steven's latest edition of *Materia Medica and Therapeutics*. He says: "Escharotics are agents that corrode or disorganize the tissues. Some, like arsenic, have a specific poisonous action upon the cells: some, like the strong mineral acids, extract water from the tissue and precipitate the proteids: some, like the alkali hydrates, not only extract water but dissolve the proteids and form with them soluble compounds: some, like nitrate of lead, form with the proteids insoluble albuminates and in so doing, liberate an acid: some, like nitrate of mercury, poison the cells directly, form albuminates with their proteids and also set free an acid: while others still, like bromin, are powerful oxidizers of organic matter."

By the profession in general and in most text books, the terms caustic, escharotic and corrosive are used interchangeably to express these different actions as stated above. It does seem very reasonable and fair that, by slightly changing the meaning of each of the above terms, we could, at least, form three distinct groups of the agents usually classified under this head.

After considerable thought and study I have concluded to adopt the following definitions, which I trust will receive your careful consideration :

A *Caustic* is a drug or agent that coagulates albumen, is more or less limited in its action and forms a soluble eschar, as phenol and trichloroacetic acid.

An *Escharotic* is any drug or agent that coagulates albumen, is limited

in its action and forms a more or less insoluble eschar, as nitrate of silver and the actual cautery.

A *Corrosive* is any drug or agent that may or may not coagulate albumen and is more or less unlimited in its action, as the alkaline hydrates and the stronger mineral acids.

These definitions give each term a distinct meaning and refers to a particular class of agents. Expressions, therefore, like "lunar caustic," and "caustic soda" should be considered misnomers. Both the drugs referred to differ quite materially in their action and the term caustic, according to the above definitions, should not be used in either case.

Again, each of these three classes of agents, as suggested, has a distinct practical application. Caustics, for example, as phenol and trichloroacetic acid, are used very largely for removing hypertrophied gum tissue, as in the preparation of proximal cavities and the setting of Logan crowns. In such cases deep penetration or an insoluble eschar is not desired. If, on the other hand, we wish to produce an insoluble eschar, as in the treatment of cancer sore or cheek hemorrhage, we use an escharotic like nitrate of silver or the actual cautery. These agents form a more or less insoluble eschar and will remain intact for some time.

In case we wish to remove a small tumor like a wart, a corrosive, like nitric acid is indicated, because both caustics and escharotics are too limited in their action to produce the desired effect.

Long, in his text book on *Materia Medica, Therapeutics and Prescription Writing*, classifies all these agents under the head of escharotics, although, in the introductory remarks of the chapter, he clearly intimates that a division should be made.

Right in this connection I would like to state that it has always been a difficult matter to classify arsenous trioxide. Long says, "It stands alone in its characteristics as an escharotic. It cannot be called an irritant. It is not a corrosive. It has no decided chemical affinities; therefore, it is not escharotic by means of any apparent chemical action.

It stands by itself as a vital or alterative escharotic in that it acts only after being absorbed by the tissue elements, altering or destroying their vital processes in an obscure manner." Now, while this may be true in regard to arsenous trioxide, most of the other drugs coming under this head can be very readily designated as belonging to a distinct class, as outlined above. The three terms, caustic, escharotic and corrosive are in use, why not apply them with a distinct meaning?

My experience in teaching the subject of Dental Therapeutics has been that students are continually failing to grasp the true meaning of definitions. They are after facts rather than principles and text books as well as instructors are at fault by not pointing out the difference in importance.

I am thoroughly convinced that a consistent application of technical terms is, perhaps, one of the most interesting and important features in all

medical and dental science. This statement is true, to some extent at least, in every science; but with the progress of modern aseptic surgery, the amount of discrepancy in regard to the signification and use of certain terms is perfectly amazing as compared with the general intelligence on this important subject.

I have made a careful and conscientious study of this subject and I very much doubt whether a better and clearer verification of the above fact can be given than is illustrated by the usual application of the terms, *antiseptic*, *disinfectant*, *germicide* and *sterilize*.

Professor Novy, of the University of Michigan, defines the terms referred to as follows:

"*An Antiseptic* is any drug, chemical substance or agent that will retard or inhibit the growth or development of micro-organisms."

"*A Germicide* is any drug, chemical substance or agent that will, in a limited time destroy all forms of vegetative bacteria."

A Disinfectant is any drug, chemical substance or agent that will in a limited time, destroy all active forms of pathogenic bacteria and their noxious products."

"*To Sterilize* means to destroy all active forms of bacteria as well as spores."

It may seem like an imposition upon your good nature, but I cannot help giving you an unusual amount of repetition to make plain the distinction between such terms as antiseptic and germicide. In Professor Novy's laboratory book on bacteriology, we have the following statement: "The first action of a chemical substance, when added to a recently inoculated culture medium, is to inhibit the growth of the organism. If the chemical substance is highly poisonous and is present in sufficient amount, it will evidently kill the bacteria present. On the other hand, many weak substances, commonly designated as preservatives, will prevent the development of bacteria, but are not able to destroy them."

Here we certainly have a clear distinction between the words antiseptic and germicide, the one destroys while the other only retards or inhibits. When sufficiently diluted, a germicide will, in most instances, act as an antiseptic.

In his text book on the principles of bacteriology, Professor Abbott points out very clearly the difference between the words sterilization and disinfection.

He says: "In most laboratories it is customary to employ the term sterilization for the destruction of bacteria by heat, and the term disinfection for accomplishing the same end by chemical agents. We shall endeavor to show that this distinction in the use of the terms is not strictly correct.

Those of you who are familiar with such methods will remember that the use of the term sterilization for destroying bacteria quite likely arose from the fact that all culture media and other articles to be rendered free

from the bacterial life are not treated by chemical agents as a rule, but are exposed to heat in an apparatus known as a sterilizer. This process is called sterilization. On the other hand, however, undesirable articles, useless cultures and all infected material may be subjected to the action of chemical agents, called disinfectants, and the process is called disinfection.

By careful study and investigation I am thoroughly convinced that the term sterilization really means a complete destruction of all bacterial life and may be accomplished either by thermal or chemical agents. Disinfection does not necessarily mean the destruction of all living forms, but only those that are infectious. Both, however, may be accomplished by the same means.

An indefinite number of illustrations might be given to show that, for example, an antiseptic agent simply retards or prevents; a germicide destroys all active forms, while a disinfectant is used principally to destroy pathogenic forms and their noxious products and, lastly, that sterilization means the destruction of all life.

Dr. Miller, in his work on "Micro-organisms of the Human Mouth," makes the statement that "A solution which devitalizes spores in one minute is out of the question, and, in fact, is not at all necessary, since the conditions which lead to the formation of spores do not exist in the mouth where we find almost exclusively the vegetative forms." Yet, in several instances, he uses this very term when the word "germicide" or "disinfectant" would have been more appropriate.

Some drugs, like phenol and the essential oils, may be used either as simple antiseptics or germicides by simply varying the strength of the solution. Others, however, like permanganate of potash and hydrogen peroxide, are excellent disinfectants and germicides, but are absolutely useless as simple antiseptics on account of their transitory character.

The real difference between the above agents is often best explained by giving their essential qualities. I shall give only one illustration and that is in the case of a simple antiseptic: A desirable antiseptic should have the following qualifications: (1) It must have staying or lasting qualities or be only slightly soluble, otherwise it will be too rapidly absorbed and its action lost. (2) It must be non-irritating, because it would remain in contact with the tissues a long time. (3) Only slightly toxic, on account of the danger of absorption. (4) It should not discolor the teeth, and (5) it should have a pleasant taste and odor.

"*Local Anesthetic*" is another expression that should not be used inasmuch as we have another term that expresses that condition. Anesthetics are usually defined as agents that abolish all insensibility.

Analgesics, on the other hand, act locally and are used either to prevent or relieve pain.

Anodynes are drugs or agents that are used to relieve pain and not to prevent it.

Obtundents are drugs or agents employed to desensitize sensitive dentine.

These terms have been coined for a special purpose, as it were, and yet how often do we hear or see in print such expressions as "local anesthetic" instead of "local analgesic" or simply "analgesic," and the word "anodyne" for analgesic" or anesthetic." Each of the above terms has a distinct use for which it was coined and intended.

We often fail to make ourselves understood or to make things plain, not from a desire to withhold information, but rather from an unintentional failure to use the proper words.

In conclusion, I would like to add that this subject has been to me a very interesting field for investigation for the past four or five years.

I sincerely trust that the task I have undertaken to point out the imperative necessity of putting into practice the subject of my plea and of finding a way of doing it may receive your hearty co-operation.

The probable result and the benefit that may be derived therefrom warrants, I think, not only the slight effort to endorse, but to put into actual practice as well.

ETHICS

By C. R. Butler, M. D., D. D. S., Cleveland, Ohio

Looking for a concise definition of ethics in the dictionaries and various encyclopedias is confusing.

The writer finds that the great scholars, from the medieval to the present time, have labored to give a clean cut exposition. And I might bring to your attention a mass of quotations, but feeling that it would be a burden to rewrite them, and a waste of your time to listen, I will simply refer you to the Code of the State Dental Society and National Dental Association as the basic principle of all professional bodies pertaining to dentistry.

Berks, a finished scholar, says, "it is the science of ideal humanity." Another says that it includes two important things; on the one hand, it consists of an investigation into the nature and constitution of human character; and on the other hand, it is concerned with the formulating and enunciating of the rules for human conduct.

Bacon places it as the foundation of moral law and justice. We find it treated of in the sixteenth century—and when observed a mark of civilization.

The best minds of Germany have written much upon the subject, and their analysis is as varied as to detail as the individual authors' conception would be in an attempt to define the attributes of Deity.

The ethics of our schools is not what it formerly was,—students fleh, teachers are not as honest, one to the other, as they should be. Students take liberties that would not be tolerated among ordinary boys and girls.

Baseball, football, bridge whist, a mild form of gambling which has become so prevalent, has engendered a laxity of honor in all grades of society.

BUSHIDO AND BUSINESS.

The Industrial Review (Tokyo, February). This journal, in editorial expression, admits that the charges of a lack of a commercial probity against the Japanese have not been unfounded. But it declares that "many of the business tricks are imported and not indigenous." Some of the worst offenders are men who had their business training in other countries, it asserts, "and as evil methods seem more easy of acquirement by people of all nations than good, it is hardly a matter for surprise that the shadiest practises of the older commercial civilizations were soon grafted on the young stock of Japan." It goes on:

"But much that was the result of sheer ignorance was too frequently attributed to evil intent. Lack of training was the prime factor in the downfall of many business houses where the crash severely affected numerous importers. We are glad to see that in the newer generation there is a vigorous striving after righteousness not only because honesty is the best policy, but because of an innate desire to live life fairly and honestly. A different class, also, is now engaging in business pursuits, a class that for ages has been imbued with the lofty principles of Bushido. High thinking in any department of life has a reflex action on all the other departments, and a man who would scorn meanness in his social life can not be tempted to descend to dishonesty in business without a struggle with his conscience, a struggle in which the probabilities are in favor of honesty triumphing. Commercial life offers far too many opportunities for going beyond the bounds of strict morality and therefore we welcome with the greater fervor any honest attempt to raise the standards of practise."

To befog the jury and hoodwink the court, by quirks and tricks, seems to be the highest ambition of the modern lawyer. Law and evidence is of minor importance; Chicanery seems to be the all-powerful weapon.

The medical profession has become honeycombed by this insidious parasite.

The all round physician and dentist have become a part of history. Specialists have taken the field.

Conditions and modes of practice of dentistry here have greatly changed within the past few years.

Cleveland has become one of the greatest manufacturing centers of the world; the very atmosphere is redolent of commercialism, and the profession has seemingly forgotten that they are called upon to deal with vital organs attached to a living organism.

And if it is desirable to have a standing among the people as professional men, then they cannot commercialize with impunity.

Dental operations that had the Cleveland stamp, used to be current anywhere among the best in the world.

The notion that the fellow across the way is your competitor, and that to secure the patronage of those who would naturally go to him, must be a large part of your effort instead of being in dead earnest to compete with one's self, to do today better things for those that come from choice,

than was done yesterday. If the latter be the constant effort, I feel sure that the highest ethics would be maintained.

The very atmosphere of the office should be such, that the incoming would feel a safety that nothing but the best will be given them and said about other practitioners; a place that is called home is no home unless there be love in it.

The operating room in its fittings, has become more like a small machine shop instead of a quiet place of refinement in manners and conversation. The skillful operator has become swamped by the wonderful appliances that advertise the marvelous things that are to be had there.

And the people are questioning with all this,—and so much specializing in medicine, surgery and dentistry—whether it is as safe as more conservative practice.

If so much specializing is the safest mode, why not adopt a custom of counseling, or has each fellow become so wise and skillful that no exchange of opinion is of value in the saving of teeth that should not be extracted or inlaid? Instances might be cited where patients were sent by an operator to another, instead of going with them; saving, possibly, irreparable damage.

Now, gentlemen, if I have succeeded in bringing you before a discriminating public—as before a glass—I have done all that could be hoped for. If you do not go out and straightway forget what kind of dentists we should be, so it may be said:

“Whether ’tis hidden or whether it show,
Let the work be sound, for the Lord will know.”

THE cause of success is always in the person who succeeds; you will see that this is, must be true, because if the cause of success were in nature, outside the person, then all persons similarly situated would succeed. The cause of success is not in the environment of the individual, because if it were, all persons within a given radius would be successful, and success would be wholly a matter of neighborhood; and we see that people whose environment is practically the same, and who live in the same neighborhood show us all degrees of success and failures; therefore we know that the cause of success must be in the individual and nowhere else.—*Constructive Science.*

EDITORIAL

THE TEETH AS A SOURCE OF SERIOUS DISEASE

THAT the teeth are the cause of more serious diseases than formerly supposed is being shown by earnest investigators.

Some years ago Dr. W. D. Miller called attention to systemic infection through pulpless and abscessed teeth and cited cases of severe derangements from them. Dr. Hunter, of England, and others have cited cases of intestinal disease from this source, and other dentists have from time to time written of neuralgic troubles and nervous affections from diseased teeth. But more recently attention has been called to tuberculous infection from decayed and pulpless teeth and severe cases of nervousness, insomnia, mania and even insanity as the result of diseased and malposed teeth.

During the recent meeting and hygiene exhibit in Boston, Mass., special attention was called to infection from tuberculosis through defective teeth. And, we understand, in Texas the dentists are co-operating with the State Board of Health in its crusade against the "white plague."

During the past year or two Dr. Henry S. Upson, Cleveland, Ohio, professor of neurology Western Reserve College, has been making an extended study of the tooth conditions of inmates of various insane asylums throughout Ohio, and of patients in his private practice, and brings to the notice of the dental and medical professions many cases of severe nerve affections and even insanity that have disappeared with the removal of the tooth irritation.

With such facts brought to the attention of the dental profession we feel that more serious consideration should be given this matter by dentists than in the past, and we have therefore devoted considerable space in this number to the consideration of this subject.

It is of such importance and so far reaching in its effects that no progressive dentist can afford to ignore it.

We all have the best interests of our patients at heart, and if it is within the power of the dentist to recognize these remote disturbances from dental origin, and he can relieve them it is certainly his duty to do so.

We therefore urge our readers to study the articles on this subject published in this issue of *The Summary* and to give them serious consideration.

WHATEVER YOU DO, DO IT WELL

THE demands of the time are for men who can do things. Men who can do any one thing better than others can do it, are the men who find places in the social system.

By observation you can find some manifestation of this everywhere. We once saw a man whose one and only accomplishment was to dance a jig on his crutch, he having had one limb amputated, and that one accomplishment was what stood between him and his family and starvation. Through perseverance he had become expert and the public saw his accomplishment and rewarded him.

Disraeli said, "mediocrity can talk; but it is for genius to observe." And Buxton, speaking of his own attainments, said, "I hold a doctrine, to which I owe not much, indeed, but all the little I ever had, namely, that with ordinary talent and extraordinary perseverance, all things are attainable." Determination and perseverance are important factors in the success of many a man. "Whatsoever thy hand findeth to do, do it with thy might," is the Bible injunction, and a good rule to carry into our daily work.

It is especially necessary for the dentist to be particular and exact in his operations. Half done means failure; well done, a step toward success.

The public gives praise and emoluments not only to those who do what nobody else attempts, but also to those who do *best* what everybody else can do *well*.

So do your work to the utmost of your ability and the reward will come to you as it has to others.

ANOTHER DENTAL SOCIETY'S PROCEEDINGS

We take pleasure in announcing to our readers that the Louisiana State Dental Society has made *The Dental Summary* its official organ.

The society is made up of progressive dentists who are doing a good work for dentistry and we are glad to add this southern society to our list. The papers of its recent meeting will be published in a future issue.

COPYRIGHTED

The publishers of *The Dental Summary* have deemed it advisable to copyright each issue of their magazine, as under the new copyright law this protects not only the reading matter contained therein but also the advertisements.

We want our contemporaries to understand, however, that we do not want to be exclusive, and that they are welcome to copy as much or as little from our reading pages as they choose. All we ask is that proper credit be given for material thus used.

GUESS AGAIN

In a recent issue of the *Scientific American* under the heading, "Science," appeared the following:

"Orthodontist" is the technical name of a new kind of dentistry. In plain English, "orthodontist" means "tooth straightener." According to last accounts, there are about 60 of him now in America, as compared with 50,000 ordinary dentists. To the orthodontist's mind, a man who extracts a tooth in regulating foolishly clings to old tradition. He holds that the properly-shaped jaw can hold all the teeth that grow.

We are surprised that a scientific publication usually so exact in its statements would publish, without investigation or at least inquiry, such an unreliable bit of information.

In the first place there is no such word as "orthodontist." Literally it would simply mean "straight dentist." There is, however, the word "orthodontia" defined as the "mechanical treatment for correcting irregularity and faulty positions of the teeth." And the "orthodontist," not "orthodontist," is the operator who devotes his time to this science.

Again, it is not a "new kind of dentistry," for it has been practised more or less for one hundred and fifty years, although dentists have not given their entire time to the practise of this particular branch of dentistry until within the past fifteen or twenty years, when the development and growth of dental science, as with medicine, has made it necessary to specialize in different branches to meet the increasing demands of the public. There were about "60 of him" once, but not at "last accounts" for there are many more "of him" now. All the large cities and many of the smaller ones have specialists of this kind.

It is doubtful about there being 50,000 practising dentists in America, and certainly not "50,000 ordinary dentists." The majority of the dentists are as thoroughly skilled in general practise as the orthodontist is in his special branch. The time has come when an "ordinary" dentist cannot meet the demands of the public in these days of great advancement. He must be a skilled operator to accomplish the results required of the dentist today would he serve his clientele as he should.

We trust that hereafter the *Scientific American* and other magazines will be as particular in furnishing reliable dental news as information from other sources in the scientific world.

AN INVESTIGATION OF PYORRHEA ALVEOLARIS

At the annual meeting of the Louisiana State Dental Society in 1908, a committee was appointed for the investigation of pyorrhea alveolaris, and after making its report at the recent meeting of 1909 (which will be published with the proceedings of this society in a future issue of *The Dental Summary*), the committee was reappointed for further investigation.

The letter sent out to societies and individuals was as follows:

GENTLEMEN—Our object in writing your society is to enlist your co-operative efforts in having the president of your society appoint a committee, as our society has done, for the purpose of investigating Pyorrhea Alveolaris, its causes, symptoms (in its earliest stages), origin, treatment, cure, and its prevention. We are to report at our next annual meeting.

This disease is the knottiest problem that confronts our profession, and our mission is, therefore, to write to all dental societies with a view of getting their co-operation by appointing committees to help in this investigation, so as to concrete the opinions of the profession at large on this disease.

The list of questions which you also receive with this letter is to be answered by your committee and to be forwarded to the chairman of this committee. We hope, in this way, to arrive at a settlement of some of the questions, and we may in the future be able to obtain aid from the government to ferret out the cause, treatment, cure and prevention of this disease.

Yours fraternally,

E. H. REMELLI,
Chairman.

620 Canal Street, New Orleans, La.

The questions sent with the letter were as follows:

1. Do you consider Pyorrhea Alveolaris incurable?
2. Do you know of any cases that have been cured?
3. In what stages were the cases when first under observation?
4. Have you ever recognized the disease before Seruial Calculus appeared?
5. What were the symptoms?
6. Do you think Salivary Calculus has any effect on the disease?
7. Were the patients under your observation of robust or delicate physique?
8. Have you ever seen the disease in youth, and at what age?
9. Do you know of any properly-treated devitalized teeth being lost by the disease?
10. Did the devitalization and root-canal sterilization and filling precede or follow Pyorrhea development?
11. At what time of life do you find treatment most efficacious?
12. Do you find Pyorrhea more in males or females?
13. Do you find it more in the upper or lower jaw?
14. Does the disease attack all teeth alike?
15. Were patients ever afflicted with syphilis, tuberculosis, uricæmia, chronic indigestion or chronic constipation?
16. Have you ever seen cases where malocclusion was a cause?
17. Do you think autointoxication a cause?
18. Do you think uricæmia a cause?
19. Is it a disease of the gum?
20. Is it a disease of the alveolar process?
21. Is it a disease of the peridental membrane?

The committee is anxious to obtain as much enlightenment on this perplexing subject as possible, and will welcome any information, whether it be from societies or individual members of the profession.

The committee is after facts and if any of our readers can assist in the good work their communications will be most welcome. Replies should be sent before January 1, 1910. Dr. E. H. Remelli, 620 Canal Street, New Orleans, is chairman of the committee, and the other members are Drs. J. J. Sarrazin and H. E. Belden, all of New Orleans.

PRACTICAL SUGGESTIONS

THE DOWEL OF THE BANDLESS CROWN

By J. H. Crossland, Montgomery, Ala.

For illustration, let us select an incisor root of decidedly conical form and quite extensively decayed in the gingival region, and that form of porcelain crown in which are united the poetry and philosophy of tooth-crowning—the Logan.

Place just enough filling material in the apical foramen to close it and not be dislodged by the pressure of the cement. Having ground the root to the desired form, shorten and sharpen the dowel, if necessary, sufficiently to allow the crown to come into contact with the root without its tightening in the canal—even though to accomplish this it may be necessary to remove half or two-thirds of its length—which will greatly facilitate its adjustment. Fit the crown by grinding, and if necessary bake on additional porcelain. Cut a piece of platinum foil such as we use for inlays to rectangular form, making its width somewhat greater than the length of the canal—its length being dependent upon the size of the canal. Perforate it freely with a plate punch or an Ainsworth rubber-dam punch to permit ingress of the solder, then, having rolled it into the form of a cornucopia, approximating the size of the canal, place it over the stub of the dowel and press the crown to place. Remove the crown and remove the foil from the dowel or from the canal, clip off the surplus, return it and replace the crown. Remove the crown; the foil will generally come away with it, but if it does not, split the stub of the post and spread the ends, or wrap a piece of fine platinum wire around it, and press to place again. Then remove the crown and the foil will come with it. The foil and dowel, or stub of the same, are then united by soldering, and the latter filled in or made sufficiently stiff. Should the soldering cause it to fail to enter the canal entirely, carry in a little rouge on a wisp of cotton, insert the post, and remove; touch red spots with a stone. Thus we make the dowel fill practically all of the canal. The essayist has applied this method for several years and has found it highly satisfactory.

A simple and easy way to enlarge a dowel is to wind fine platinum wire around it until it approximately fits the canal, and unite the wire and post by soldering. This method is best suited to cases in which it is not necessary to lengthen the pin; but a little experience will enable one to so manipulate the wire that lengthening will result. This method has also been found very convenient and valuable.

Another method of either enlarging or lengthening, or both, is to fill the canal with wax and press the crown to place, and remove all, and cast gold to reproduce the form of the wax. Of course, the gold may be cast on the pin or separate from it, with a canal for it, and the gold and post may be united by soldering, or the gold set in the canal, and the crown set as in the usual way. Gutta-percha may be used for one or both settings. The latter method is offered as a suggestion only, as it is an untried idea of the essayist.

The extent to which a small canal should be enlarged to permit the enlargement of the dowel—just how much should be taken from the root and given to the post—is always a question for the judgment of the operator; but the question of leverage referred to above should always be thoroughly considered, for it is a plain mechanical fact that other things being equal, addition to the length of the dowel diminishes the liability of splitting the root as well as breaking or bending or dislodging the dowel.

Thus may we widen the field of usefulness of the bandless crown. The object of this effort is not to depreciate the value of the banded crown—the Richmond was our ideal of other days, and we resort to it now in some instances. When the frailty of the root and the limited tenacity of the cement prohibit reliance upon the dowel alone, we choose it as a lesser evil than a plate or a bridge.—*Dental Cosmos*.

INLAY ABUTMENTS

By E. K. Blair, Waverly, Ill.

I have had some experience with what I think were pretty well set inlays that I have used as abutments in short bridges. I have been wondering how much mobility there is in teeth and I am trying to determine how long the cement behind the gold inlay will withstand the mobility, where the bridges are subjected to the ordinary service required of them. I have had one bridge loosen and the patient came to me and said the bridge had been troubling her for three or four weeks. After I removed and examined it, I found some decay and set it temporarily. She has more cement behind that inlay now than it was when first set. This is annoying and leads one to wonder what may be the condition of other short bridges anchored with large inlays.—*Dental Review*.

COVER FOR TABLE

By Grafton Munroe, Springfield, Ill.

The use of white sheet celluloid as a bracket table cover has proven so satisfactory to me that I have thought it worth while mentioning it. I get the thin sheet celluloid (white) at an artists' supply store, selecting the proper dimensions, and fasten it in place with thumb tacks. It is not as noisy as glass, and will not permit the catching fast of an instrument when picking one up. It is easily wiped off with moist cloth at the end of each operation while instruments are being cleansed for the next.—*Dental Review*.

PULP EXTIRPATION IN PYORRHEIC TEETH

G. L. Curtis

About twenty years ago I fully realized the importance of extirpating the pulps of teeth whose sockets were surrounded with pyorrhetic conditions, cleansing and filling their canals to the apex, and amputating the portion of the root which could not be so treated.

At that time I observed that as long as the pulps of affected teeth possessed vitality, inflammation in the surrounding tissue was bound to occur and that it would not subside until the pulps were removed. At that time, however, I did not have the courage of my convictions, and only removed the pulps of teeth whose roots were almost completely denuded. Seeing the healthy condition that uniformly followed in that portion of the jaw in which extirpation of the pulps had been made, I gradually extended the practice until in 1896 I began extirpating the pulps of all teeth whose roots were involved in any pyorrhetic invasion. The result of this method of procedure in conjunction with constitutional treatment was so satisfactory that I was able to state in my first paper relating to the subject, that pyorrhea alveolaris can be cured.

THE WHY OF IT.

You may ask why the pulps of pyorrhetic teeth induce inflammation of the sockets and tissues surrounding them. These results occur because, under existing conditions, the pericemental membrane does not supply these parts with sufficient nourishment. The pulp is thus deprived of nutritive supplies sufficient to maintain the happy balance of the different forces that sustain the tooth, and it becomes impoverished in vital energy and unable to perform its normal functions. It is in a condition similar to that of an electric bell when the battery is exhausted or the current is grounded and run off into improper lines. I regard the normal tooth as a healthy organism, sustained in health by electrical as well as by blood conditions, and whenever this happy balance between the two becomes disturbed, a tendency to disease results.

CONDUCE TO DESTRUCTION.

There seem to be predisposing causes (such as the degenerating influence of syphilis) which aggravate and perpetuate the destructive process to such an extent that special treatment for the removal of these complications is necessary before a healthy condition of the parts can be established. It is well understood that moisture is necessary to maintain nervous action and that nerve force is to promote the flow of blood in the arteries and veins. Every blood vessel is accompanied with a sufficient number of nerves to provide it with the amount of nervous energy necessary to convey the blood to all parts where it is needed to maintain the nutrition and life of the tissues which the vessel, with its numerous ramifications, penetrates. These microscopic nerves probably support the nervous currents which cause the blood to pass through the zone between the capillaries of the arteries and the veins. To injure one of these nerves is to impair the flow

of blood in the vessel and thereby cause a corresponding improvement of the tissues which this vessel supplies with nutritive material. To reiterate, both nerves and blood vessels are necessary for the functional existence of any part.

MUST BE FREE.

Anything that interferes with the free passage of nerve force or blood supply either interrupts or short-circuits the nerve current necessary to maintain complete nutrition, and invites destructive tendencies, which if not prevented, or completely eradicated, produce degeneracy and death; therefore, the function of the pericemental membrane is to supply nourishment to the pulp and tooth as well as to cushion the tooth. The membrane receives its nourishment from the alveolar tissue, which, in turn, largely supports the cementum. If it becomes impaired by congestion, separated from the roots by calcific deposit or bacteria, the membrane must necessarily degenerate and become destroyed, and if not quickly checked it soon involves the entire tooth.

A BELIEF.

I have been informed that the microscope has demonstrated that the dentinal fibres pass directly through both the dentine and cementum, ending in the pericemental membrane—a belief I have for a long time entertained. This being the case, it is evident that the pulp and pericemental membrane are intimately associated and dependent each upon the other for their nutritive support.

If it were possible to make a section of the dentine and cementum in line with the dentinal fibres, I believe it would show a perfect anastomosis of both blood vessels and nerves between the pulp and the pericemental membrane.

You can understand by this how it is that when the membrane is separated from the root, the nerve current is continued, but in an interrupted and erratic manner.

CONDITIONS NECESSARY TO RETAIN A PLATE IN THE MOUTH

By H. F. Methwen, Chicago, Ill.

The conditions necessary to retain a plate in the mouth are close adaptation of the plate to the soft tissue, relief in the palatine or other portions to prevent undue pressure on the hard areas, and proper anatomical occlusion of the teeth so that the plates will not tip under the stress of mastication. This is accomplished by securing the three-point contact. The viscosity of the mucous and atmospheric pressure are important agents in retention. The tongue and cheek muscles, acting as a pump, practically make a partial vacuum of the entire palatine portion of the plate.—*Dental Review*.

CORRESPONDENCE

A STATEMENT FOR THE BENEFIT OF THE DENTAL PROFESSION

WE the undersigned, feeling a deep sense of gratitude to Dr. D. D. Smith, of Philadelphia, for his sacrifice of time and labor in devoting two days for our instruction and enlightenment of Oral Prophylaxis, desire to make public the following statement concerning our observations and impressions, hoping thereby to favorably influence the members of our profession for their own good to give the subject the consideration which it deserves.

On December 18, 1908, a party of about twenty-five dentists, mostly from New England, visited Philadelphia for the express purpose of attending an exhibit of patients and a clinic given by Dr. Smith at his office; to say that what we saw there was a revelation but justly expresses it.

During the day at intervals of fifteen minutes, about forty of Dr. Smith's patients, of all ages, presented themselves, offering their mouths for inspection; although the day was stormy there were but two who failed to keep their appointments, one coming over seventy miles for this purpose alone.

Such beautifully kept, healthy mouths we never saw before.

There were cases where no new decay had appeared for a period of five or more years; we found children's mouths in a perfect state of health, with gums hard and of a beautiful pink color, teeth clean and white with scarcely a filling in the molars or any indication of decay.

Case after case was exhibited where the ravages of pyorrhea, still to be seen, were shown to be under perfect control.

The restoration of lost members to useful and artistic proportions by bridge work was a delight to behold, as it was a delight also to hear the words of appreciation from those for whom this work had been done.

The surfaces of the teeth in every mouth were beautifully polished, the enamel possessed a peculiar lustre and translucency, and the gums were pink and hard; there were no signs of congestion or inflammation, in fact it was a uniformly healthy condition that obtained in all these mouths.

This was brought about and maintained by frequent visits on the part of the patient, as often as once a month in most cases; each tooth is individually subjected to careful treatment in a manner and for the purpose so clearly pointed out by Dr. Smith in his articles to the profession.

The patients are carefully instructed in the care necessary between these visits.

To briefly sum up this remarkable and unique clinical exhibition from our observation and the testimony obtained, we believe this system of Prophylaxis to be the best and most reliable means for the prevention of dental caries and Pyorrhea-Alveolaris.

We believe that clean and sanitary mouths have a great influence in maintaining bodily health, we further believe that this most important subject of Oral-Prophylaxis should be taught in every school of dentistry, and it is our earnest desire that the members of our profession give this subject of prevention their serious consideration.

NED A. STANLEY,	D. HURLBUT ALLIS, D. D. S.
<i>President Mass. State Dental Society.</i>	C. S. HURLBUT, D. D. S.
CHARLES E. PARKHURST, D. D. S.	J. WESLEY SHAW, D. D. S.
W. A. CAPON, D. D. S.	W. O. BEECHER, D. D. S.
ALFRED C. FONES, M. D., D. D. S.	I. B. STILSON, D. D. S.
H. W. HARDY, D. D. S.	D. B. HAWLEY, D. D. S.
JOHN W. ESTABROOKE, D. D. S.	R. E. TUTHILL, D. D. S.
ROBERT TUCKER MOFFATT, D. D. S.	JAMES E. HEAP, D. D. S.
ELBRIDGE A. SHOREY, D. D. S.	WALTER A. DAVIS, D. D. S.
EDWIN C. BLAISDELL, D. D. S.	JOHN R. YORK, D. D. S.
A. J. SAWYER, D. D. S.	

TO AVOID THE REPOLISHING OF GOLD PLATES

By Dr. Amoedo.

If you wish to use solder without being obliged to repolish the plate, cover it with boric acid, which will protect the plate against the action of fire and will prevent the solder from extending.—*La Odontologia*.

DETECTING MOISTURE IN INVESTMENTS FOR INLAYS

By C. B. Plattenburg, Chicago, Ill.

A sure way to determine if the moisture is all driven out of the investment for gold inlays, during the preliminary heating, is to place the investment, sprue end up, on the zinc top of the work bench, and if any moisture remains in the investment a round, moist spot will show on the zinc. —*Dental Review*.

INLAY ANCHORAGE

By Hart J. Goslee, Chicago, Ill.

Since the first of my experience in inlay work I was just mechanic enough instinctively to know that we could not depend entirely upon the adhesive properties of any of our cements for a retaining medium, and therefore I resorted to the dovetailed form of cavity in all instances where it was possible. I regard it as absolutely necessary.—*Dental Review*.

SOCIETY ANNOUNCEMENTS

NORTHERN INDIANA DENTAL SOCIETY

The annual meeting of this society will be held in Goshen, Indiana, September 7th and 8th, 1909. An exceptionally good meeting is expected, and it is hoped that there will be a large attendance.

Goshen, Ind.

W. O. VALETTE,
Secretary.

AMERICAN SOCIETY OF ORTHODONTISTS

The ninth annual meeting of the American Society of Orthodontists will be held in Cleveland, Ohio, on Monday, Tuesday and Wednesday, October 4th, 5th and 6th, 1909.

43 West 48th Street, New York City.

FREDERICK C. KEMPLE,
Secretary.

OHIO STATE DENTAL BOARD

The Ohio State Dental Board will hold its regular fall meeting in Columbus on October 19-22, 1909, for the examination of applicants for license.

All applications, with the fee of \$25.00, should be in the hands of the secretary not later than October 9.

For further information and blank applications address

F. R. CHAPMAN, *Secretary*,
305 Schultz Building, Columbus, O.

SOUTHWESTERN NEBRASKA DENTAL SOCIETY

The sixth semi-annual meeting of the S. W. N. D. S. will be held at Holdrege the 28th of September. A fine program has been prepared for this meeting and all dentists of southwestern Nebraska are invited to attend.

W. A. McHENRY, *Secretary.*

OBITUARY

IN the death of Doctor Frederick Shively Whitslar of Youngstown, O., the dental profession has lost one of its most worthy pioneers.

A stroke of paralysis resulting from emphysema of the lungs with heart complications caused his death on August 7th, 1909.

Dr. Whitslar was born in Austintown township, then Trumbull Co., O., on September 7th, 1824. In March 1849 he was married to Miss Matilda Fox, who died October 28, 1898. Three children, Dr. W. H. Whitslar of Cleveland, Grant S. Whitslar, of Youngstown, and Mrs. Allie Carr, who made her home with her father, survive him. A sister, Mrs. Darrow, of Youngstown, is also living.

The deceased was a self-made man in every respect. Born in pioneer days of Ohio state he was bound out as a youth to work on a farm. While a young man he taught school in the old log school-houses and later took up the practice of dentistry. He commenced this profession by studying Harris's Principles and Practice, received some instruction from Dr. Corydon Palmer, and learned the rest in practice and dental societies. He engaged in the practice of dentistry over fifty years, writing many articles for dental magazines which gave him a national reputation.

From Appleby's "Tin Foil," page 99, we find that Dr. Whitslar was the first to use tin in operative techniques. This was in 1845.

He was active in politics, especially at the time before the civil war, when he was an anti-slavery advocate and assisted many slaves to escape by the underground railway. Dr. Whitslar was the first president of the Youngstown city council.

When the strife between the north and south arose he enlisted to serve his country.

Capt. Whitslar at all times performed gallant and meritorious service and was commended by his superior officers for his bravery and conduct.

He received an honorable discharge at Camp Dennison on the 27th day of August, 1864.

He was elder of the Central Christian church of Youngstown and has often substituted for ministers of all denominations.

Dr. Whitslar was a member of Tod Post No. 29, Department of Ohio, Grand Army of Republic. Also a member of the Delta Sigma Delta fraternity; The American Dental Association, of which he was once president; the Northern Ohio Dental Association; Mahoning Co. Dental Association; Odontological Society of W. Pa.; Twenty-second District Missionary Society, of which he was president, and charter member, and organizer of the City Library Association.

Dr. Whitslar was an honorable, upright man beloved by all who knew him.

NEWS AND OPINIONS

Educate—Educate—Educate.

Dentistry as a science, and in no mean degree as an art, is older than the pyramids—older than Karnak.

Dig, excavate, explore where we will, wherever human remains and human records are found, there also are found proofs of the fact that the preservation and restoration of teeth, and the making of artificial substitutes for natural teeth, have been known and practiced to some extent.

Indeed, we often are surprised, upon reading accounts of explorers, to find how closely some of the prehistoric dentists approached the most approved modern methods, particularly when we consider the crudeness of the instruments and appliances at their command.

And yet, with centuries of time stretching behind us, does it not seem passing strange, almost unbelievable, that, in enlightened America, a country whose loud-est if not its proudest boast is its up-to-dateness; in this country of all countries, a citizen of which might almost as well be dead as to be behind the times; in America, that leads the world in material, mental and ethical advancement, less than ten per cent. of the people ever make even the slightest attempt to care for and preserve their teeth—by far the most important of all the bodily conserving organs?

No very deep thinking is necessary to arrive at the conclusion that somebody is to blame for this deplorable condition; that there is neglect of duty somewhere; that some class in the community is not living up to its opportunity. And to whom can this charge attach if not to the dentist? He alone knows the importance of the subject; he alone is fully aware of the far-reaching consequences following the neglect of the teeth; and he alone, of all men, has the necessary knowledge, born of experience in the affairs of his daily life, to teach the people and to enforce his teachings with hundreds of "horrible examples."

To the writer it seems that dentists, as a class, have been slack in the recognition of the most important phase of the ethics of their profession: Its duty to the public; to eighty millions of people in America alone, who require education far more than they require the use of the excavators and the forceps.

To whom are laymen to look for instruction, for enlightenment, for knowledge in every department of science if not to practical experts, to specialists, in each particular line? And where are we to find such experts and specialists if not among men whose daily life is spent in the prac-

tical working out of problems and their technical application?

In all of our large cities, the professions are specialized. There are men who stand all day, forceps in hand, like the butcher at the shambles, doing nothing but extracting; whose cuspidors run red from morning until night with the blood of victims of neglect—of our neglect! a neglect which a keener appreciation of the ethics, the unwritten law, of the profession, would make forever impossible.

"Conservation, preservation, restoration—these things make up dentistry; extraction is surgery; it does not belong to dentistry. Preservation, preservation and again preservation; this is the cry of every advanced man in the most advanced profession on earth; the call of an age that will not stand still."

Before dental practitioners can make good the claim that dentistry is worthy of recognition as a profession, and not a mere avocation, a higher regard for ethics as applied to the great lay public needs to be inculcated. A profession is a vocation, a calling, a God-given privilege to advance the welfare of the human family, not a mere business, not a trade, not a money-making pursuit.

Every physician stands pledged by the Hippocratic oath to devote his life to the service of humanity, making his own material welfare a secondary consideration, an incident; and by that oath he is made member of a profession, his standing in that profession being largely determined by the sacredness with which that oath is kept.

When every graduate of a dental college is called upon to subscribe to a similar oath, and does so with his soul and not merely with the point of his pen, the question: Is dentistry a vocation or an avocation, a profession or a trade, will be in a fair way of being answered as every clear-thinking, broad-minded, progressive, public-spirited dentist wants it answered: and an important clause of that oath should concern itself with the education of the people away from the need of the major operations of dentistry.

How well the medical profession is keeping the educational phase of its vow is shown by the work of such men as William Hanna Thomson and many others, who are driving into the minds of the people facts of medical science that must go far toward the lengthening, the broadening and the deepening of human life—and that is the sole, only and exclusive aim, object and purpose of every profession that is not a trade.

It is a fact well known to many besides the writer that it is the aim of the medical fraternity to be recognized as educators, rather than medicators; it equally should be the aim of the dental branch to be recognized as educators, not merely as excavators.

So may it be. G. E. HARTER.

Dental Society Elections

Officers for the ensuing year have been elected by the various societies as follows:

The New Mexico Dental Society: Dr. E. J. Alger, Albuquerque, N. M., president; Dr. Chauncy Rathbun, Roswell, N. M., vice president; Dr. Charles A. Eller, Albuquerque, N. M., secretary-treasurer.

Wisconsin Dental Society: President, Dr. Harvey Jackson, Milwaukee; vice president, Dr. Southwell, Milwaukee; second vice president, Dr. R. Baldwin, Viroqua; treasurer, Dr. Gropper, Milwaukee; librarian, Dr. Morten, Milwaukee.

Iowa Dental Society: President, Dr. C. M. Palmer, of Charles City; vice president, Dr. P. H. Jones, of Clear Lake; secretary, Dr. E. B. Cutler, of Osage; treasurer, Dr. M. H. Martenson, of Clear Lake.

Colorado Dental Society: President, Dr. W. A. Briery, Denver; vice president, Dr. F. S. McKay, Colorado Springs; treasurer, Dr. William Smedley, Denver; secretary, Dr. C. A. Monroe, Boulder.

Texas Dental Society: Julian Smith, Austin, president; Bush Jones, Dallas, first vice president; J. C. Fife, Dallas, secretary; W. A. Sheerer, Houston, member of executive committee.

Virginia Dental Society: President, Dr. E. P. Applewhite, Newport News; vice presidents, Drs. F. W. Stiff, Richmond; W. H. Moseley, of South Boston; W. H. Ewald, Norfolk; recording secretary, Dr. G. F. Keese, Richmond; corresponding secretary, Dr. W. H. Pearson, Hampton; treasurer, Dr. W. F. Sturgis, Norfolk.

National Dental Examiner's Association: President, John J. Wright, Milwaukee, Wis.; vice president for the East, Albert L. Midgley, Providence, R. I.; vice president for the South, Starr Parsons, Washington, D. C.; vice president for the West, T. E. Turner, St. Louis, Mo.; secretary and treasurer, Charles A. Meeker, Newark, N. J.

Thirty-six states were represented in the convention.

New Jersey Dental Society: President, Dr. Charles Dilts, of Trenton; vice president, Dr. W. F. Naylor; secretary, Dr. Charles A. Meeker, of Newark; treasurer, Dr. Henry A. Hull, of New Brunswick.

Dr. Meeker succeeds himself for the thirty-seventh consecutive term, and Dr. Hull for the twelfth.

Oregon Dental Society: President, Dr. Millard C. Holbrook; vice president, Dr. C. V. Sittler; secretary and treasurer, Dr. Wallace Shearer; editor, Dr. Julio Endelman, of Ashland.

California Dental Society: Dr. Harold Seager, of San Francisco, was elected president; Dr. John Grant, of Woodland, vice president; Dr. Chas. E. Post, of San Francisco, secretary, and Dr. T. N. Inglehart, of San Francisco, treasurer.

Race Suicide a Blessing

According to Doctor Woods Hutchinson, writing in *Woman's Home Companion*, the whole question is befogged by misconceptions. He says the question is not a new one, but is very old.

In summing up, he says: "I believe that the evidence is conclusive that race suicide, so far as it has yet gone, has proved an almost unmixed blessing instead of a curse; that the race can never again return to the method of blind and wholesale reproduction without thought of the future.

No class or group in the community which believes itself worthy to exist can of course view with equanimity any proposal to limit the offspring of marriage to less than three, or such number as may be necessary to secure the survival of that quota to adult age, so that the second generation may be at least a trifle more numerous than the first.

"On the other hand, biologic morality, while deprecating the production of children, who are likely to be born unfit, or become so from lack of proper support and training, glorifies and exalts as both the highest racial duty and the most precious individual privilege the bearing of children by those who are personally fit to bear and financially competent to rear such as will be of value to the state. There is no achievement better worth living for, no more valuable legacy that can be left to the future, no more enduring claim to honorable remembrance, than a family of well-born, well-reared children.

"At the same time there is a growing tendency to encourage and promote in every possible way the marriage at a reasonably early age of young people, who are particularly desirable as future ancestors, to use a Hibernicism. Some day possibly we may become sufficiently intelligent to endow this sort of matrimony with state funds. At all events, an intelligent direction of race fertility, by selection of parents and rational limitation of the number of children, will be the path of future progress."

Self-distrust is the cause of most of our failures. In the assurance of strength there is strength, and they are the weakest, however strong, who have no faith in themselves or their powers.

"There is no duty we so much under-rate as the duty of being happy.

"By being happy we sow anonymous benefits upon the world, which remain unknown even to ourselves, or, when they are disclosed, surprise nobody so much as the benefactor."

The Ethics of Commercialism.

Ethics, as ordinarily understood, has to do with the duty each of us owes to his fellowman as a citizen of the world. All conduct, every act of our lives, has some relation to ethics.

That kind of conduct that has for its aim the betterment of life in any way, or its prolongation, comfort, usefulness, may properly be called ethical conduct.

That kind of conduct that has for its ultimate object the reverse of this, or that takes into account only the gain, pecuniary or otherwise, of a single individual, regardless of effects upon others, or that is known to be injurious to others, is very properly classed as non-ethical.

That kind of conduct that has to do with the individual only, that has, neither in motive nor results, any bearing whatever upon the lives of others, is called indifferent conduct, so far as ethics are concerned.

In thinking and speaking on these subjects, some of us are far too prone to consider them from the standpoint of an ideal state of society rather than from that of a society constituted as is our own at the present stage of evolution.

Under ideal conditions each member of a community or of the world at large may be supposed to consider every act with regard to its effect upon every other member: and, under such conditions, as is easily seen, self-regarding acts would need but little consideration, for the simple reason that, each member being imbued with consideration of and regard for every other member, none of the members would plan or perform any act that had not for its motive and end the welfare of all.

How far our present humanity is fitted for such a life a brief glance at material and social conditions at present prevailing suffices fully to show. And, so long as present conditions prevail, self-regarding acts must have first attention, whether we regard the question from the standpoint of enlightened selfishness or of altruism; indeed, without the exercise of acts prompted by enlightened selfishness, acts prompted by considerations for the good of others would soon become impossible, for the simple reason that men who are disposed to regard others at the expense of themselves soon find themselves

powerless to help even themselves, much less to help others.

It is the tacit acceptance, the underlying knowledge of this truth, whether present in our every-day consciousness or not, that has given rise to the spirit of our business institutions, sometimes rather slightly referred to as "Commercialism."

The great writers on Evolution divide the development of Ethics into four heads or classes: First, Selfishness—regard only for the good, the advancement, the growth of the individual, without regard for others in any degree or kind. Second, Divided Selfishness—regard for the good of the individual and his descendants and connections, still regardless of those outside the immediate circle. Third, acts based upon the desire for the advancement of the individual and those dependent upon him without interference with the rights of others to perform similar acts for the same ends. Fourth, a state of consciousness that, while demanding the broadest, fullest and longest life for self and progeny, so shapes acts to ends as not only not to interfere with the rights of others, but to aid others in obtaining similar depth, fullness and length of life.

Men who have reached the fourth stage of evolution are considered as high up in the scale of humanity, representing, as they do, the highest stage of progress thus far attained—and as we see it, the highest stage attainable. Anything beyond such a stage, speedily causing the extinction by self-neglect, carelessness, etc., of the extreme altruist, makes further progress impossible.

And why is not this definition equally applicable to the modern spirit of commercialism, as manifested in the acts of the great explorers, inventors, scientists, manufacturers and merchants?

There are many considerations which lead many men to mask from themselves the acknowledgement of this truth, for the reason that artificial education, both religious and secular, has filled men's minds with the idea that acts which are intended for their own good and pleasure are necessarily evil, and only those which call for great self-sacrifice for the benefit of others are really commendable, really actively beneficent. Most men, while professing to believe these things, live from quite another set of motives; and these motives are, in most cases, ethical; that is, they demand for themselves the most that can be obtained from life, but do not intend interfering with similar acquisition on the part of others; and, not only this, but we are satisfied that no great success can be reached upon any other basis, and that the highest success is attainable only through

conformity with the demands of the highest ethics—the willingness to aid others.

Enlightened selfishness would seem to suggest that each man exercise his knowledge and ability for the benefit of himself and those near him, which means that he should give freely to all others the best that is in him, only upon condition that those who are the beneficiaries of his powers shall compensate him in some manner. In the days when the forest and the stream provided the means of livelihood, the hunter and the fisherman exchanged the products of their skill and hardihood with those whose knowledge enabled them to produce other articles necessary to his comfort and well-being. Conditions now are in no way different. Those who produce foods exchange them for other goods with those who do not produce them, taking in exchange other articles necessary. The only difference between primitive society and society as at present constituted is that in the early days the articles themselves were exchanged, whereas we now exchange them for tokens representing real value, and these tokens we call money.

We take it as a fact that every man will acknowledge to himself, whether some men will do so to others or not, that both himself and others are entitled to full compensation from others for every addition made to the sum of human welfare and happiness. Co-operation governs the life of society, and without co-operation no society could exist, nor would there be occasion for such co-operation.

Modern commercialism crystalizes all these facts into a system called buying and selling, but which is as much barter and exchange as was the cruder method of olden times, in which the hunter carried his slain deer to the settlement and there exchanged it for homespun, sugar, tobacco, etc.

The man who produces something that adds to the length, comfort, fullness or usefulness of life is entitled to be rewarded, to be fully compensated for his efforts by those who share in its results. This is only another way of saying that those who use any particular article must pay for it, not only its cost, but a sufficient sum to leave in the hands of the maker funds with which to obtain other articles necessary for his comfort, for the completeness and usefulness of his life.

This additional sum is called Profit, and it is as necessary to the evolution of human life and conduct as is the sunshine to the growth and maturity of vegetation. If the producer of an article should receive in exchange for it only the amount it had cost him, which means only the amount necessary to replace it, there would be nothing left in his hands with

which to procure other necessary articles; and his life, instead of being benefited by his efforts, would be dwarfed, narrowed and shortened thereby.

If the producer of an article were able to fix the additional sum he is to receive as profit, a great deal would depend upon the stage of evolution each particular individual had reached; and we are not at all certain but that the average individual would, in this, be more just than society at large; but as a matter of fact, prices of all commodities, except such as are controlled by monopoly, are fixed by society at large, and the amount of profit the individual may receive is regulated by the law of supply and demand, and by competition.

In early days, when communities were small, the owner of a certain piece of desirable property or some certain commodity that he desired to sell, only need let it be known among those other members of society nearest him in order to arouse demand. And this letting-it-be-known was primitive advertising, and is just as much modern advertising—is all there is and all there can ever be in advertising.

The modern man, having produced an article of value in the lengthening of life, or adding to its comfort or completeness, is ethically required to let that fact be known throughout as wide a circle of his fellowmen as possible in order that many may share in his good fortune. No man is compelled to share in it: No matter how much merit an article may have, this advertising, this letting-it-be-known, is not only desirable and necessary, but is demanded by ethics, by considerations that have for their end the greatest good to the greatest number. Instead of turning over his invention or discovery to society at large, to the government, and receiving therefor a certain sum, paid from the general revenues to which all are contributors, as would be the case under certain artificial forms of society known today as Socialism, he shares it only with such as need it and are willing to pay him for it, contributing also a sum in addition to the cost as profit, which may remain in his hands as reward, to be used by him in the purchase of other commodities.

We have read somewhere that articles of real merit do not require advertising; that those interested will take it up and make it generally known throughout the classes that may be interested. This reasoning may have been very well away back in the misty past, when no community numbered more than a few thousand, while those interested in any particular commodity could be counted by the hundreds. But such a procedure surely does not ap-

peal to reason in these days of congested urban populations, twentieth century limiteds, airships and wireless.

The man who is producing anything that is beneficial to others is ethically bound to let that fact be known to as many of his fellowmen as possible in the shortest possible time. To neglect to do so is to be guilty of non-ethical, hence immoral, if not positively criminal conduct.

The whole sum and substance of advertising is to let-it-be-known and let-it-also-be-known what those who have used it think of it.

Surely, no man whose life is based at all upon ethical considerations can find fault with the profits that accrue from the exploitation of an article that contributes to human well-being. Such fault-finding, if real and earnest—most of it is purely artificial and for effect, in conformity with what-men-think-they-should-believe-but-don't—would mark the fault-finder as very low in the scale of evolution.

As an evidence that men really do not believe these things let us reverse the case. Suppose that one of these fault-finders, these super-ethical surface fellows, should make a discovery or an invention of value to his fellowmen. You know what he would do with it; just what every other sensible man would; divide up the benefit of his work with his fellowmen, in exchange for all that it had cost him, and as much more as he could get, and be thankful.

Some of these hyper-ethical non-thinkers remind us of a conversation between two Irishmen, about as follows:

"Pat, if you had two million dollars would you give me wan million?"

"Begorra, that I would," says Pat.

"You'd make a foine Socialist, Pat; good fer ye. But if ye had two houses would ye give me wan?"

"Begorra, I would that," says Pat.

"Whoo! It's the rare foine Socialist y'd be makin', Pat. But, Pat; if ye had two goats and Oi had none, would ye be afther given' me one of yer goats?"

"Not by a dom soight," says Pat.

"And phy not, Pat?"

"Bechuse, be jabers, Oi have two goats!"

That's the long and the short of it. Men who would resent the imputation of non-ethical conduct do not seem to take any pains to conceal their dissatisfaction at the success of another in achieving just the thing that their whole lives are bent toward achieving, but which, for some fault of their own, we may rest assured, has not yet reached fruition.

G. E. HARTER.

The Economic Revolution in India.

The forces that are advancing East-Indian society are most actively at work in the cities; but the provinces are also being influenced to change the old for the new. While in the East-Indian metropolis mills and factories run by steam or electricity are rising to engage in the manufacture of the commodities needed by India, agriculture is being improved in the rural districts. Hitherto 90 per cent. of the 300,000,000 East Indians have been engaged in agriculture, practiced with old-fashioned, cumbersome machinery and methods or in decadent farm industries. Today, on the one hand, agricultural methods and implements are being improved and, on the other, the undue pressure on agriculture is being removed by more East Indians engaging in manufacture. Already India has commenced to challenge the right of Japan and Occidental countries to supply the Oriental market with cotton yarn.

During the last two centuries the East Indian has concerned himself with being a mere producer of raw materials. Today he is anxious to engage in manufacturing. Indeed, he has already made a remarkable start in this direction. The "Swadeshi" movement (which means "My country's goods for me") has given a wonderful impetus to industrialism, and has resulted in the formation of banks, insurance companies, and other commercial associations, as well as proving instrumental in building mills and factories worked by modern motive power and conducted on up-to-date plans, the most noteworthy feature being that they are financed, managed, and manned by native Indians.—From "India in Transition," by Saint Nihal Singh, in the *American Review of Reviews*.

Food for Study.

Publishers The Dental Summary—I have received the July number of The Summary and find that it will take a good month to digest it well. Have had time to read only the first few pages of advertising and the first article by Dr. Hinman. The July Summary is by far the finest dental journal that I ever have read—clear and right to the point, without any ruffles. My only regret is that the August number will not be also such a number.

R. M. VAN DUZER.

Syracuse, Kans., July 10, 1909.

Dr. B. Frank Gray, formerly at Colorado Springs, more recently at Denver, Colo., has removed to Los Angeles, Cal., where he is engaged in the practice of orthodontia exclusively.

Robberies.

July 12—Dr. H. J. Riley, Missoula, Mont., gold leaf worth several hundred dollars.

July 14—Dr. W. A. Post, Neenah, Wis., office ransacked.

July 14—Dr. Irwin Unger, Cleveland, O., a dozen sets of teeth.

July 14—Drs. Chapman & James, Cleveland, O., teeth and bridgework.

July 15—Dr. R. L. Hopkins, Sterling, Ill., gold worth \$10.

July 15—Dr. F. E. Ladd, Brockton, Mass., gold bridges, dental forceps and speculums worth \$50.

July 15—Dr. George Be Vier, Kankakee, Ill., gold worth \$70.

July 15—Dr. T. E. Hayes, Trenton, N. J., \$50 worth of gold bridges and cuff buttons valued at \$10.

July 15—Dr. J. E. Keeler, Trenton, \$5 worth of gold caps and stamps.

July 15—Dr. Earl Swan, Lima, Ohio, \$25 worth of gold.

July 17—Dr. J. A. Meshinger, Dubuque, Ia., gold, silver and platinum valued at \$132.50.

July 20—Dr. Cummins, Elkhart, Ind., \$36.20 in cash and gold worth \$5. Dr. Geo. Menges, gold crowns and fillings to the amount of \$35. Dr. Geo. E. Harter, \$45 worth of gold.

July 21—Dr. J. B. Morgan, Davenport, Ia., gold bars valued at \$60.

July 23—Dr. E. D. Costales, Mt. Vernon, N. Y., diamond pin worth \$50.

July 25—New Haven Dental Co., New Haven, Conn., 5 shares of Academy stock valued at \$13,000.

July 26—Dr. Frank Deitch, St. Joseph, Mich., gold worth \$20.

July 24—Dr. J. S. Goodmanson, Aberdeen, S. D., gold worth \$40.

July 30—Dr. J. L. Brown, Rahway, N. J., dental instruments and gold.

August 2—Green Bay, Wis., Dr. J. B. Theisen, \$50 worth of teeth and \$40 worth of gold; Dr. C. O. Gage, \$35 worth of gold and teeth; Dr. Sutherby, \$15 in gold; Dr. G. R. Hickey, \$30 in gold and teeth, and Dr. R. B. Power, about 10 worth of gold.

Fires.

The office and residence of Dr. P. T. Turner at Tracy, Cal., was burned out July 26, making a total loss of \$2,000.

Dr. W. E. Walker's dental office at Chatham, N. Y., loss \$500, July 24.

Dr. Fred S. Anderson, of Richmond, Ind., has been appointed by Governor Marshall to the state board of dental examiners, to succeed Dr. W. H. Shaffer, of North Manchester. The appointment is for two years.

Deaths.

June—Dr. J. N. Overstreet, Mulberry, Fla., of blood poisoning.

July 4—Dr. B. F. Scott, North Yakima, Wash., of heart failure, aged 56 years.

July 6—Dr. Daniel Siddall, The Dalles, Ore., aged 77 years.

July 9—Dr. H. P. Chase, Exeter, N. H., aged 38 years.

July 18—Dr. J. W. Haughwout, Fort Dodge, Ia., of diabetes, aged 68 years.

July 21—Dr. C. B. Hussey, Carthage, Mo., aged 48 years.

July 24—Dr. E. H. Hollem, Chicago, Ill., of consumption, aged 36 years, at Modesto, Cal.

July 27—Dr. W. W. Richardson, New Philadelphia, O., aged 83 years.

July 29—Dr. G. R. Fitzgerald, Dorchester, Mass., aged 33 years.

July 31—Dr. Albert Emery, Boston, Mass., of paralysis, aged 79 years, at Crescent Beach, Me.

Marriages.

July—Dr. Ruel M. Speer, Battle Creek, Mich., and Mrs. Lorena Roof, of Climax, Mich.

July 7—Dr. E. C. Borley, Minneapolis, Minn., and Miss Edith Grigg, of Grand Rapids, Mich.

July 14—Dr. Lee Spurbeck, Eveleth, Minn., and Miss Sarah Beyers, of Plymouth, Wis.

Dental Board Examinations.

District of Columbia, 15 applicants; 14 successful.

Massachusetts, 151 applicants; 84 successful.

Montana, 29 applicants; 24 successful.

Pennsylvania, 185 applicants; 165 successful.

Ohio, 86 applicants; 71 successful.

The British Dental association is making a strenuous effort to modify the anæsthetics bill which was presented to the house of commons recently. The object of the bill is to prevent the administration of anæsthetics by unqualified persons, and it is proposed to effect this by prohibiting the administration of any general anæsthetic by other than a legally qualified medical practitioner and by enacting that after January 1, 1911, no person may be registered under the medical acts unless he shall have produced evidence that he has received theoretical and practical instruction in the administration of anæsthetics.

A new dental college recently organized in Atlanta, Ga., has been named the Southeastern Dental College.

Fido Broke a Tooth

A youth slunk into the dentist's office with a pained expression on his face. His hat was gone and his smart attire showed evidence of a struggle.

The dentist stepped forward with a professional air. "What can I do for you?"

The youth glanced apprehensively at the door. "I—I wish to have a tooth removed."

"Very well, please be seated."

Shuffling over to the chair, the youth crawled into it on his hands and knees. The dentist looked on in amazement.

"Great heavens!" he cried, "what's the matter with you? Are you crazy?"

"Well, you see, I went to call on Miss Neverhome, and—and"——

"And what?"

"Fido bit me."—*Judge's Library.*

"In the year 1900," says Prof. W. I. Thomas, of the University of Chicago, writing in the September *American Magazine*, "there were more than 5,000,000 women gainfully employed in the United States (as against 23,753,836 men), the rate of increase between 1890 and 1900 of the number of women so employed was much greater than the corresponding increase for the employment of men (for women, 32.8 per cent.; for men, 21.9 per cent.), and the number of women gainfully employed increased more rapidly in the decade than the female population. So, whether we wish it or not, the old order is already changing rapidly. It is too late to theorize on this point. It means simply that the old idea that all women should live on the activities of men and should limit their own interests to the bearing and rearing of children has gone to pieces."

Every reader of The Dental Summary will be glad to know of the great increase in subscriptions during the past few weeks. Since the announcement of the issue of the Big Casting Number, in June, nearly fifteen hundred new subscribers have been added to the list, and they are still coming. Do you know a dentist in your town who is not a subscriber? Just send us his name and address; we will do the rest. There is no reason why The Summary should not be read by every practicing dentist. While our stock of July numbers lasts our Special Bargain Offer holds good: July, 1909, to and including December, 1910, for the very little sum of \$1.25—eighteen numbers; less than the price of a good cigar for each number. Just show this item to any dentist that you happen to know not to be a subscriber. He may thank you for it.

The dean of Bryn Mawr college for girls says that it is her experience that more marriages are wrecked by a difference of opinion between the parties as to the use of the bath and the tooth brush than by any other cause, so far as she knows. Good! There couldn't be a more justifiable cause for divorce than neglect of personal cleanliness. The writer happens to know a man of sixty-five, whose wife is a woman little more than half his age. She owns a beautiful set of teeth, that grew right where they are, not on some dentist's Christmas tree, of which she is justifiably proud, and of which she takes the best of care, while her ancient husband boasts that he never owned a tooth brush in his life, and only takes a bath when his clothes stick to him and must be soaked loose. Moral: There isn't any; but it may be interesting to watch the divorce court records.

If any of the readers of these pages feel the need of X-Ray apparatus they should write the Kni-Low Electric Co., 100 Boylston street, Colonial Theatre building, Boston, Mass., for a catalogue that will give complete information concerning the latest and best appliances for the work. The special dental appliance made by this concern is especially adapted for the treatment of pyorrhea alveolaris with the high-frequency current, is simple of operation, easily controlled, is portable, generates abundant power, is of attractive appearance and is thoroughly guaranteed. The X-Ray is the only apparatus that can be depended upon to yield a perfect picture of the mouth, giving the practitioner reliable information not otherwise obtainable.

If any of our subscribers are receiving two numbers of The Summary each month they will be doing us a favor by calling our attention to the matter. Since the absorption of The Dentists' Magazine list, formerly printed at Cleveland, several such duplications have been reported to us.

A lady of Corinth, Miss., brought suit for \$10,000 damages against a dentist for injury done to her tongue January 2. The plaintiff was in the dental chair and the dentist was using a buffer on her teeth, when it slipped and cut the under part of her tongue. She has been unable to use her tongue since, she says, and she has been subsisting on tabloid and liquid foods.

A dentist, convicted on April 8 of practicing dentistry without having a license from the Maryland State Board of Dental Examiners, was sentenced to pay a fine of \$250 and costs. Sentence had been suspended by a motion for a new trial, which was withdrawn.

An Opinion.

Cleveland, Ohio, July 29, 1909.

PUBLISHERS DENTAL SUMMARY—In a former letter I expressed my opinion of the first numbers of *The Dental Summary* under its new form, and that opinion still holds good, with the further statement that improvement is increasing in quality of contributions and illustrations, but I would like to see more editorials from Dr. Bethel. I enjoy your advertisements. They are an education in themselves.

Very respectfully,

W. H. WHITSLAR.

We should be much pleased to have similar expressions of opinion from all of our readers, whether favorable or otherwise. We aim to make *The Summary* the one magazine that no dentist can afford to be without, and you can be of great assistance by commending when you can, by criticising and condemning when you feel it to be necessary. The *Summary* is your magazine and each of you has the fullest right and the widest privilege to help make it all that you think it ought to be.

A Terrible Moment.

Willie (coming into the house breathlessly)—“Papa, hurry up! There’s a man with a wagon outside to see you about putting in the coal.”

Slimson—“Tell him I’m busy just now, Willie. I’ll go out and see him in a few minutes.”

Willie—“But you musn’t keep him waiting, papa. You don’t know who he is. He is the father of the pitcher of our baseball team.”—*Woman’s Home Companion*.

The Weis Mfg. Co., Monroe, Mich., is manufacturing a very convenient and useful desk, especially fitted up to meet the requirements of dentists. A postal will bring a catalogue and full information.

By personal experience, The Havana Cigar Co., Allentown, Pa., is known to the writer to be dependable in all ways. This concern does just what its advertisement promises, and its products will give satisfaction. If you smoke, send a trial order.

Dentist to Patient—“I see you had ham for breakfast this morning.”

Patient—“No, not this morning; yesterday morning!”—*Proceedings Indiana S. D. S.*

A Natural Born Dentist.

John Wesley Gaines, of Tennessee, once went on the warpath about a bill authorizing the appointment of thirty dental surgeons for the Marine Corps. The bill provided that all appointees must be between the ages of 24 and 35. Mr. Gaines declared that the limit should be reduced to 21 and cited the case of a thoroughly capable dentist in his home town.

“Was he so competent when he was 21?” asked Representative Longworth.

“Why,” shouted John Wesley, “you don’t understand the case. He was a natural born dentist.”

History of Dentistry in Cleveland.

A complete history of dentistry in Cleveland, Ohio, is being written by Dr. H. L. Ambler. Only enough copies will be printed to supply advance subscribers, and all who desire a copy, the price of which will be \$1.50, should send the request with name and address to Dr. H. L. Ambler, 428 Rose Building, Cleveland, Ohio.

Dr. Edward A. Hanna, located in Lincoln, Neb., has been appointed by the adjutant general, John C. Hartigan, to the position of dental surgeon for the Nebraska National Guard, and assigned to the medical department of the Hospital Corps, the doctor’s rank is that of lieutenant.

Supposed Dental Thief Arrested.

A man giving his home as St. Louis, has been arrested at Shelbyville, Ind., for robbing dental offices. He was caught with the goods on him, and is believed to be the thief that operated in Elkhart, South Bend, LaPorte and other Indiana cities a year ago.

Progress finds its inception in discontent, and discontent is the result of comparison between the actual and the ideal conditions with which life is surrounded.

Dr. H. E. Kelsey, Baltimore, Md., has limited his practice to orthodontia.

Whisky is a hard taskmaster. It takes everything and gives nothing. In small quantities it is fatal to everything requiring skill and precision. Used to excess, it is ruinous to any vocation.

The controversy as to who wrote the plays commonly attributed to Shakespeare, continues, Mark Twain being one of the latest to take up the lance on the Baconian side. He suggests that in a "holeless, crackless, exitless prison cell" there be locked a mouse, an inexperienced kitten, and a tomcat, "scarred from stem to rudder-post with the memories of strenuous experience." He suggests that we wait half an hour and then open the cell in the presence of a Shakespearite and a Baconian. Of course, the mouse is gone. "One verdict," says the humorist, "will say the kitten contains the mouse; the other will as certainly say the mouse is in the tomcat." This is the time-honored argument, characteristically expressed, that Shakespeare did not have and could not have had the education and experience which are found in the plays. Despite all the arguments, however, the palm is likely still to be held by Shakespeare. Whoever wrote the plays was a supernal genius, and when you grant a man genius you grant him not only brilliancy of reasoning faculties, but also unusual powers of intuition. Genius does not have to wait until a mallet is used to drive facts and fancies into its head; it picks them up in passing and holds to them. Much comes to it by way of intuition. This is exemplified in the life of Mozart, the great musician. At the age of three years he was able to employ the laws of harmony to produce wonderful results, yet he had been taught nothing of them; he knew them by instinct. Shall we then say he failed to produce the music which is accredited to him at that age? Instead of the musical instinct, Shakespeare had the human intuition. His wonderful imagination was capable of seizing upon a mere suggestion and developing it into a scene, an act, or a whole play. Although he came from a region where the vocabulary of the average man was about 300 words, there is no reason to suppose that a man with a genius for language should not pick up a wonderful thesaurus of expression in London, where he mingled with men of all classes. Mere argument will never result in a victory for the Baconians. They will have to produce facts before the name of Francis Bacon will be substituted for that of William Shakespeare.—*Pathfinder*.

Are you ever troubled with misfit and loose plates? It isn't at all likely that you always escape this common source of trouble and annoyance. Protect yourself, save your time and labor, by using Bridgeford's Plate Paste. Write The Pioneer Mfg. Co., Macon, Mo. That concern will be glad to tell you all about it, give you references to many dentists who have found in it relief and help, and answer any other inquiries you may care to make.

"Keep Your Temper, Anyway"

S'posed things don't go to suit you
Ev'ry day of all the year?
What if troubles persecute you,
Till you're filled with dread an' fear?
'Tain't no use to keep a-howlin'
'Bout yer ills from day to day;
Don't let people ketch you growlin',
Keep your temper, anyway.

Don't git sour an' glum an' fretful,
Jes' keep sweet an' be in style;
S'pose the world is blamed forgetful
An' unkind to you—jes' smile.
Smile right in the fact of Trouble,
Cheerfulness will allus pay;
Let your happy spirits bubble,
Keep your temper, anyway.

Friends are bound to flock about you,
If you show a cheery face;
World can't git along without you
In the van to set the pace.
So, when things don't go to please you,
Lemme pause right here to say:
If the little troubles tease you,
Keep your temper, anyway.
—E. A. Brininstool in *Los Angeles Express*.

"By the Skin of His Teeth."

Cleveland, O., August 4.—Ora Coltman, a Cleveland artist, was recently saved from imprisonment in an Austrian jail by the fact that he did not have false teeth. In a letter just received by his sister, Mrs. Frances Hoffstodt, of Salem, O., he relates the story of his arrest and release.

An American had swindled a number of Austrian women in Salsburg. He escaped to Innsbruck, where Coltman was staying. The Austrian police mistook Coltman for the thief, followed him to Burghausen where they arrested him and kept him in jail for four days on soup and bread without allowing him to communicate with friends. Through the assistance of the United States consul at Munich he was finally released after having been examined by the victims of the swindler who found that his teeth were his own instead of false, such as the thief had.

The *Delineator* for September contains what is really the literary feature of the month in the magazine world—the first of a series of short stories by Rudyard Kipling. The story is entitled "Cold Iron" and introduces Puck, of Pook's Hill, who will be welcomed by all lovers of fiction. This tale reveals the author at his best; its magic will enthrall the reader and give him much to ponder on. It is a long time since Mr. Kipling has contributed to any periodical, and the fact that he has written these stories for *The Delineator* speaks volumes for the enterprise of this great woman's magazine.

THE DENTAL SUMMARY

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The Michigan State Dental Society
The Indiana State Dental Society
The Kentucky State Dental Society
The Louisiana State Dental Society
The Virginia State Dental Society

The Northern Ohio Dental Society
The Northern Indiana Dental Association
The Eastern Indiana Dental Society
The Southwestern Michigan Dental Society
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YES—FOR SHORT*

By, Frank W. Low, Buffalo, N. Y.

CAN stomatic conditions be so modified by resorting to stomachie medication that frail human teeth may be rendered more immune to enviroenal tendency to rapid enamel decay?

Out of consideration for your publication or program committee I furnish the answer "Yes—for short" as the title for my paper, rather than frighten all concerned with so hypothetical an interrogation. Now, however, having gotten you to "lend me your ears," with the characteristic effrontery of every hobbyist, I boldly appear with a "chip on my shoulder and blood in my eye" to maintain that the thing *can be done*. Since this is but prognosis, and because diagnosis should precede, I intend to weary you first with some conclusions that have been arrived at in consequence of labors which were primarily undertaken as chairman of the committee of scientific research of the dental society of the state of New York during the years 1905-6. Investigations started then in an official capacity, I am still pursuing. However much events in the future may modify them, the following are the conclusions at present entertained:

DEDUCTIONS CONCERNING THE ETIOLOGY OF ENAMEL DECAY.

First—That, as maintained by Miller, the cause of *all* decay of the

*Read before the Northern Ohio Dental Association, June, 1909.

teeth is the presence upon their surfaces of the bacteria, such as are abundantly present in human saliva.

Second—That the relative immunity of different individuals depends more upon the factor of the bacteria being fastened firmly upon some given location upon the tooth than upon the number of bacteria present in any given quantity of saliva.

Third—That the potent agents to accomplish this phenomena are most effective in the following order:

(a) The gelatinoid plaques—Being a substance made, under favorable circumstances, by the bacteria themselves, as demonstrated by the findings of Dr. Black.

(b) Glutinoid smears—Holding colonies of bacteria not so firmly attached, but covering larger surfaces, surrounding posterior teeth and causing a girdling decay. Such smears being caused by a colloid degeneracy of the mucous follicles which cover the tonsils and other mucous membrane, more particularly in the posterior portion of the mouth.

(c) Mucin—The floating flocculent masses found most abundantly in the saliva which appears in the mouth, to be noticeably stringy or ropy.

Fourth—That the most efficient means of overcoming the tendency to decay caused by any of these agents at present known, is the so-called prophylaxis treatment, as advocated by Dr. D. D. Smith, of Philadelphia.

Fifth—That medication by stomach, consisting of the administration of $\frac{1}{2}$ grain Potassium Sulphocyanate every twenty-four hours, materially facilitates this treatment, when gelatinoid plaques or glutinoid smears prevail, because it induces a constant state of superabundance of said Potassium Sulphocyanate in the saliva, which is a most powerful solvent for all gelatinous and glutinous substances.

Sixth—That, while gelatin and glutin are amenable to Sulphocyanate influences, thereby being rendered soluble in a considerable measure by its presence, on the contrary, this medication will be of no avail where unfavorable environment of teeth is due alone to the excessive presence of mucoid substances, because Potassium Sulphocyanate does *not* act as a solvent upon mucin.

Seventh—That rapid tooth decay may be caused by either one of these factors, but is more often induced by two, and sometimes by all of them, in combination, and finally it is the writer's *most positive belief* that rapid decay cannot progress except where it can be proven that some one or more of these conditions may justly be accounted blamable.

Whether human saliva is, when normal, in any degree inhibitive upon the growth of the bacteria as found in the mouth is a much mooted question.[‡] It is a strange coincidence that Dr. Black should lean to the opinion that it is *not*, while at the same time he makes use of mildly inhibitive medicaments in all his lamb broth cultures when desiring to *force* mouth

[‡]Correspondent's report New York State Dental Society by Dr. Henry C. Ferris, Dental Cosmos, Dec., 1908, page 1423.

bacteria to artificially produce the identical plaque which protects them and enables them to work the greatest havoc on the teeth. Possibly he reasons that it is the property of *abnormal* saliva to be slightly inhibitive thus causing the plaque formations on the teeth, in mouths where decay is prevalent.

Once upon a time the writer found a specimen of saliva that when treated to determine whether acetone was present, instead of securing an odor of iodoform as should have resulted from his experiment,* a distinct and quite aromatic odor of the oil of cloves was presented to his olfactories.

So startling was this presentation that it inaugurated a new departure in his line of research.

This line has been followed by two successive committees, of which the writer has in neither instance been a member, but their report to our state society this year will embody a most positive opinion that whatever may be the truth regarding the contention concerning the inhibitive property of normal saliva on bacterial growth, the theory which presumes that the presence of potassium sulphocyanate in the saliva is inhibitive to *plaque* formations on the teeth is true, whatever may be the truth regarding the contention concerning the inhibitive property of normal saliva on bacterial growth.

I shall not attempt to weary you with the steps of their most interesting and instructive experiments, neither will the limitations of this present discussion permit that all the interesting phenomena which have from time to time so amazed and stimulated the writer's imagination should be here recounted, but out of it all has grown the following somewhat hazy or nebulous theory which he feels at least, is worthy of further and concerted investigation.

THE THEORY.

When any human organism is in perfect balance the saliva in the mouth of such an individual is in *just* the right degree inhibitive; consequently, when a typhoid fever germ or one that would otherwise breed the dread tuberculosis is accidentally admitted either or both are in some way restrained,† while such bacteria as are essential, are permitted to pass on to take their place to favor or promote the most perfect processes of intestinal digestion. Now when some day comes that this perfect balance is disturbed, the organism is at once aware, and in its superhuman effort to guard life's very portal the saliva at once becomes more than normally inhibitive; then it is, that all the flora of the mouth are undergoing consequences, and such bacteria as otherwise would be floating about in the saliva freely, now finding that their environment is not congenial they

*Take 1 C. C. of saliva, add a crystal of sodium carbonate and a few drops of Gram's reagent, then warm. The smell of iodoform indicates the presence of Acetone.

†Preventive in nature, but not destructive as in the sense of a germicide. F. Barnard LeRoy, New York City, Cosmos, Dec. No. 1908. P. 1427.

in turn react. Those that produce the lactic acid exudate essential to the softening of superficial tooth enamel, feeling in common the changed conditions, at once begin a process looking toward self preservation, in consequence the gelatinoid plaque appears; under its cover they find congenial company, but normal foods no longer being come-at-able, they corrode the lime salts and burrow toward the dentine just as plant rootlets travel underneath the sod to seek congenial soil.

Now is the time when the dentist must "get busy," striving mechanically to remove all forming plaques, while he fools the bacteria with sulphocyanate bait, using it as a solvent—as it is proved to be—for gelatin.[†]

In other ways, for other reasons, and at other times, the human organism may be so out of balance that colloid degeneracy of the tonsils is brought about, then glutin instead of gelatin furnishes shelter to the tooth destroying minions. Again, the dentist must get busy, mechanically removing with his wooden sticks the glutin as before he did the gelatin, again fooling the bacteria by stomach administration of the potassium sulphocyanate, because it is equally solvent for glutin as it is for gelatin.

If any are prompted to ask, why not use potassium sulphocyanate as a mouth wash instead of administering by way of stomach? here is the answer. As a mouth wash it would be effective only for the brief period it was held in the mouth by tedious and determined effort on the part of the patient, whereas, in consequence of so slight a dose as one-half grain administered but once in twenty-four hours the saliva becomes impregnated and it is constantly effective. While this *almost* invariably is so, it is not always. The writer has found but two out of several hundred patients where stomachic administration did not result in saliva impregnation.

INVESTIGATION.

Before undertaking the treatment of any case it is imperative that the dentist should first secure a specimen of his patient's saliva, and test same by methods which are about to be described. Until this is done he is in no wise competent to treat, and I should indeed be very sorry that I had ever advocated stomachic medication should haphazard treatment result at all generally, because of any of my writings.

A most convenient method for securing a proper sample is to place a small beaker on operating tray, and with mouth mirror and exploring instrument begin examination about the teeth as if looking for cavities to be filled, keeping patient's mouth open constantly until a considerable accumulation of fresh saliva is observed. Request patient to spit this into the

[†]A patient who had naturally no potassium sulphocyanate in the saliva furnished 2 C. C. to which 2 C. C. of distilled water was added. Into this mixture $\frac{1}{2}$ gr. of gelatin was immersed and the test tube kept at room temperature for 212 hours before gelatin became completely dissolved. The saliva from same patient's mouth after she had taken $\frac{1}{2}$ gr. doses of potassium sulphocyanate for ten days, under same test, required only 77 hours to dissolve the same amount of gelatin.

beaker instead of cuspidor. I adopt this method of securing sample because I find otherwise the patient is apt to attempt to hawk the mucus up out of the throat thereby sometimes contaminating specimen with catarrhal and other objectionable secretions.

For each examination I require in the neighborhood of 4 C. C. of saliva.

EXAMINATION.

First examine to determine whether there is naturally an abundance of potassium sulphocyanate in the saliva. Method for doing this is to place 2 C. C. of saliva in a small test tube, adding an equal quantity of distilled water and shaking the mixture well together; next add 5 drops of an aqueous saturated solution of perchloride of iron and again shake. If the resultant color is a pale lemon I conclude there is *no* potassium sulphocyanate present, if a light amber there is only a little.

TREATMENT.

When either of the above showings follow my tests I prescribe one-half grain tablets potassium sulphocyanate every night at bedtime. After about a month's treatment I discontinue medication for about ten days and again examine saliva, when I expect to find, following above described examination, that a deeper color, almost or quite the color of red wine will result. I find with some patients that this deeper staining continues to be present for several months, while the saliva from the mouths of others begins to fade even after a few weeks. If the latter condition occurs I again place patient under treatment, otherwise treatment may be discontinued indefinitely. Of course if I find the deeper or wine colored staining present in the saliva upon first examination, I resort to no medication unless I discover upon passing my exploring instrument about the necks of the lower molars that there is a considerable gray, cheesy deposit accumulating about the necks of the teeth. This deposit is quite different from the ordinary deposits of tartar, and underneath it will be found that peculiar roughened, pitted condition of the enamel, which denotes that the above described condition signifies the presence of glutinoid smears. The glutinoid smears result from colloid degeneracy occurring upon the mucous surfaces of the tonsils and other posterior tissues of the mouth, as I have mentioned before.

This condition, next to the gelatinoid plaques, is most potent in working mischief, especially about the necks of the lower back teeth. Treatment for this condition is identical with that of the gelatinoid plaques which I have just described.

There now remains but one other condition which I consider inimical to sound teeth. While it does not so much damage as either of the conditions that are amenable to sulphocyanate treatment, it may yet do considerable, and sometimes requires attention coincident with sulphocyanate medication. I refer to the condition which results in a thick or ropy, and

stringy saliva. This trouble is caused by the presence of excessive quantities of mucin in the saliva, and is most often found in the mouths of pregnant women. When present, the treatment for its elimination consists in the administration of teaspoonful doses, after each meal, of the Schlotterbeck Compound (Hydrastis & Pepsin), which is manufactured by the Schlotterbeck & Foss Co., Portland, Maine, and can be procured of any reputable pharmacist. The medicine should be taken in a little water. Its administration causes the mucous follicles of all the mucous tissues of the mouth to close up and cease leaking excessive quantities of mucin into the oral cavity. Supplementary to this medication by stomach, I advise my patients—as a local treatment—to hold in the mouth for at least one full minute, on three or four occasions throughout the day, a solution composed two-thirds of water and one-third of Glyco-Thymoline. This has a marked astringent stimulant effect upon the tissues.

Treatments as above described in conjunction with monthly prophylaxis as advocated by Dr. D. D. Smith, of Philadelphia, have invariably worked wonders in the mouths of my patients where conditions were previously truly most desperate.

COBBLERS OR DOCTORS—WHICH?

Now a word by way of special pleading, gentlemen—and I am done. None of these conclusions concerning which I have talked to you can yet truthfully be said to be proven beyond all doubt, and it must be from the mouths of a multitude of witnesses if they ever are proven; but is the day not about to dawn when the reputable dental practitioner will be more of a doctor and less of a cobbler than at present?

Dr. W. B. Dunning, of New York, in discussing one of our early reports of the Committee on Scientific Research at our New York State Society, said, "I remember that when a member of our profession read a paper in New York some time ago in which our operative procedures were referred to as patch-work some one in discussing it asked, 'if the essayist considered the beautifully finished fillings of our best operators as patch-work?' In answering the question the essayist said he certainly did so consider even such beautiful operations, the only difference being, that in those instances it was *good patch-work* in contradistinction to much that is poor, and that all filling operations should stand under the same head." Dr. Dunning commenting, said, "that this might seem a little harsh because we know how much good work we are doing by our present methods," still said he, "I wish to emphasize the point that the procedure which shall minimize patch-work or render it unnecessary is the consummation most devoutly to be wished."

Now, if this consummation is ever to be reached we must begin at once to gravitate more toward the vocation of a doctor, in order that the necessity for our remaining cobblers may be appreciably lessened.

Saliva enters indispensably into our most *vital* processes, and at the

very portal of digestion. To me it is incomprehensible that our brothers of the healing art should not have long ago known more about it. Why is it, that in this age and day, to attempt investigation is much like going into the jungle without guide or compass? Gentlemen, the time has come when this jungle *must be explored*. Let us all go in together, then, and in order that we be not lost let a beating of drums and a blowing of trumpets keep us within hailing distance. Thus only will it be possible that we may discover something.

DISCUSSION.

DR. W. H. WHITSLAR, Cleveland: It is certainly a privilege to listen to Dr. Low's paper because it is one that bears witness to scientific research. In this paper we perceive the imprint of a thoughtful brain and the ready application of knowledge for the benefit of mankind. I have been aware of Dr. Low's investigations for some time and it is a gratification to know that his investigations have received the recognition of all investigators along the line of study pertaining to the saliva. Recent publications give Dr. Low credit for his discovery and no one has been able to dispute his claims. The New York State Dental Society have endeavored to follow up Dr. Low's studies and their committees have made reports by advancement but definite conclusions have not been made. This requires thousands of experiments. If a direct ratio could be established between the susceptibility to decay and immunity from it, then the problem would be much easier, for then deductions could be computed. Life principle, however, is not measured by either liquid or dry measure, hence all kinds of conditions must be taken into account and a balance "struck." As Dr. Low has said, "Unusual decay in the human teeth is produced by bacteria and they do the greatest harm under the plaque, and the next greatest harm when existing in prolific colonies associated with flocculent, floating masses found in the saliva containing mucin. Another condition known as the glutinoid smear is a fruitful condition for the promotion of decay." Dr. Low's treatment is to eliminate the plaque and also the amount of mucin and return the natural quantity of potassium sulphocyanate in the saliva which is, according to modern analysts, a constant factor in salivary analysis.

It is difficult to learn the exact composition of the plaque, although I believe it is made up by a colony of microorganisms in zooglea form clinging to the enamel. These plaques shield the organisms which are growing underneath, hence the first stage of decay is protected. At this point the dentist needs to be alert and practice the so-called prophylactic treatment, polishing all the surfaces of the teeth carefully.

We are indebted to Dr. Henry C. Ferris for several formulas for treatment of the surfaces of the teeth to assist in disposing of these plaques. I wish to call attention right here to the most excellent report made by the same gentleman at the annual meeting of the New York State Society a year ago and published in the *Dental Cosmos* December, 1908, page 1423. This report consists of the opinions of the leading authorities of the world concerning the antiseptic property of the saliva and what forms of bacteria are affected. These authorities claim that no ingredient of the saliva can be eliminated to be considered a germicide, but the saliva in its normal balance through its chemical and physiological fermentive action inhibit the growth of bacteria. This leads us to further study the physiological changes in the saliva from the time it begins to be formed in the salivary glands. These glands are the instruments through which the body finds an exit for not only effete matters but those enzymes which affect the tissues of the mouth and food which passes through it. Now Dr. Low's idea of medication through the mouth to alter the secretion seems to me rational and from reports given show more permanent action than if reliance depended upon something to rinse the mouth with. Great claims are made frequently by makers of mouth-washes or powders of their antiseptic qualities, which really don't amount to anything, *unless* the user gives persistent and continuous attention to their use.

A LITTLE OF THE BUSINESS SIDE OF OUR PROFESSION*

By E. R. Butts, D. D. S., Niles, Mich.

IT IS a matter of great importance that the dentist should impress upon the people that he is a man of sterling character, so his patients will consider him one of the foremost men of his community. One thing that lowers him in the people's estimation is his own inclination to submit to their ideas. He too often feels that fifteen or twenty minutes service for a patient is not worth much. This is one of the reasons why dentists throughout the country are charging only fifty cents and even twenty-five cents for plastic fillings. Two or three dentists in a small town will set about cutting each others' throats by lowering their prices while their fellow citizens heartily endorse it. This is what some of the people want. Dentists in a small town should rather combine for their mutual benefit as they do in larger cities.

I think there would have been a better attendance here today if we had all thought more about the business part of our work. I often think of a remark of a wealthy retired dentist who lives in my town. Before he makes a deal of any kind with anyone he always wants to know how much money there is in it.

I think one way of raising the standard of dentistry is by being more strict with our accounts. Some dentists may have nearly a cash business, but we are all sure to have a certain number of accounts. I think we should send out our statements on the first of every month. It makes it a little more businesslike to have a stenographer make them out for you. I think a good many dentists look over their accounts and say: "Well, that person is good; I will let that account run a while, because I might make him mad if I send him a bill so soon." I think that is wrong. Here you let go the man that can afford to pay, and try to collect from the poor man because he might move out of town or lose his job. Serve them all alike; send out the statements the first of every month; after you do this a while, your patients will expect to get a statement if they owe you. They will make more of an effort to have their accounts paid. After about the third statement, I usually send a statement similar to the following: I put down the amount of the bill and under it I write, "An early settlement of this account will be appreciated, as I shall put all my old accounts in the hands of a collector the 15th of this month." You will find that they will begin to think about the bill by this time, and if they intend to pay at all, they will arrange to settle before the 15th of the month. If they do not settle then, live up to the letter, and put the statement in the hands of a collector.

Another important part of our work is: How can a dentist situated in a small town or a small city, increase his fees and extend his practice, while other dentists about him want the business regardless of the fees?

*Read before the St. Joe Valley Dental Convention, Niles, Mich.

We may increase our knowledge on this point by studying the attitude of others towards us when we are the purchasers.

Suppose you go with your wife or some lady to a millinery store to purchase a hat. Your lady has a moderate-priced hat in view, of course, "or she would not be a good dentist's wife." The milliner first shows her the moderate priced hat, then he says: "Here is one that is more substantial and more beautiful," at the same time showing her the same and telling her why it is superior to the former. He does not say anything about the price, but speaks of the workmanship, beauty and lasting qualities in the hat. He raises the customer's idea of the value until the hat first shown can no longer fill the mental picture and it is rejected because it fails to please, and the better hat is purchased. The milliner has led her through four well defined mental phases: attention, desire, conviction and action.

Now in our work would it not pay us to stop and talk to a patient who wants a \$5.00 crown or an \$8.00 plate and tell them the advantages of the better plate and crown not only because of the better materials we would use, but also the better workmanship? When you have finished the piece of work, the patient will be better satisfied because the work looks better, and you will be better satisfied because you know it will last longer and give better satisfaction. It probably would take a little talk of about ten minutes to convince the average patient that you were right. Perhaps not that long. How can you make two or five dollars, working in the laboratory or at the chair, in that length of time?

Gentlemen, can we not apply a few of these ideas to our own practice in such a way that it will benefit us? I will leave the question with you.

EARLY DENTISTRY IN AMERICA

By H. L. Ambler M. S., D. D. S., M. D., Cleveland, Ohio

THE Plymouth Company was incorporated in England in 1606, by royal patent to Popham and Gorges, and was reorganized under the name of Council for New England in 1622, and the people who composed this company were known as "Separatists." In 1630 the company (colony), by the agency of the Earl of Warwick, and Sir Ferdinand Gorges, obtained from the Council for New England its last patent. Preparations having been made in the early part of this year, a fleet of fourteen sail, with men, women and children, numbering fifteen hundred, arrived in Massachusetts Bay on the sixth of July in the above year. The company took care to send along a barber-surgeon, Robert Morley, who was engaged to serve the colony for three years, and with him also appears to have come Lambert Wilson, a surgeon, who was sent for the same period of time, and he was instructed not only to cure the sick members of the colony, but in addition such Indians as needed him.

AGREEMENT THE PLYMOUTH COMPANY MADE WITH ROBERT MORLEY.

The following is a copy of an agreement which is self-explanatory: "Agreed with Robert Morley, servant to Mr. Andrew Matthews, late barber-surgeon, to serve the company in New England for three years, the first to have twenty nobles (one noble is 6 S. 8 d.), the second year thirty, and the third year twenty marks (a mark is 13 S. 4 d.), to serve as a barber and surgeon on all occasions belonging to his calling to any of this company that are planters, or their servants, and for his chest and all in it, whereof he hath given an inventory, if on the sight of it, it be approved, five pounds is to be allowed and paid to him for it, and the same to be forthwith paid."

Another account says: "In 1630 the Plymouth Company sent from London to Boston a company of physicians, an apothecary, and three barber-surgeons. Outside of the barbers there were medically educated gentlemen who confined their practice to treating diseased conditions of the teeth and gums, correcting irregularities, cleaning and filling teeth, extracting and replacing with artificial substitutes."

The coming of these barber-surgeons was one of those epoch-making events in history which are at once the fruit of the past, and the seed of the future.

The writer believes that those above mentioned were the first to practice dentistry in this country, for he has examined a great many volumes of records beginning with 1620 when the Pilgrims landed, and he did not find any reference to dentistry before 1630, notwithstanding there were physicians and surgeons.

William Dinly was the name of one of those barber-surgeons whose record we found and he was one of those who in 1637 was disfranchised in Boston because he did not believe, religiously, as those in power thought he ought to, and they denounced him as a heretic for following Wheelwright and Anne Hutchinson. "As a preacher of heresy he enjoyed singular advantages, he was more than ordinary laborious to draw men to those sinful errors that were formerly so frequent, and now newly overthrown by the blessing of the Lord, upon the endeavor of his faithful servants with the sword of truth, he having a fit opportunity, by reason of his trade: so soon as any were set down in his chair, he would commonly be cutting off their hair and the truth together, notwithstanding some report better of the man, the example is for the living, the dead is judged by the Lord alone." In 1638 during a violent storm, a Roxbury man, suffering agonies from the toothache, sent his maid for William Dinly to come and draw it. Whether or not Dinly proposed at this fit opportunity to draw also the man's errors cannot now be said; anyhow both man and maid lost their way in the storm, and were found several days later frozen to death. Poor Madam Dinly, sick at home, gave birth shortly afterward to a male child, who was named, with homely pathos, Fathergon Dinly. The widow (Alice) married Richard Critchley or Croychley in 1639, and when she died in 1645, he married again. Critchley owned a house and lot which he purchased of Nathaniel

Williams, and when Dinly met his sad fate he left the next lot to his widow and children. The record says: "It is to be understood that both the house and garden, and also the two acres do belong (to) the wife and children of William Dinly, although they be put under the name of Richard Croychley, who only possessed them in the right of his wife and her former husband's children." A son of William Dinly, named John, survived him, and the infant with the name of sad remembrance, who came after his father's death—Fathergon Dinly—administered on his elder brother's estate.



(Autograph of Fathergon Dinly.)

Besides these two sons, William Dinly had Thomas, born Jan. 9, 1636, baptized Jan. 17, 1636, and Abigail, born 1637, baptized Oct. 8, 1637.

In 1635 William Dinly, a barber-surgeon is number three hundred and forty in the list of church members, and in the list of freemen for April 17, 1637, his name also appears, and in 1638, John Hood of Cambridge, leased land in Halsted county, Essex, to William Dinly of Boston.

In August 27, 1675, among the list of soldiers who served in the first or Mount Hope campaign, the name of Dinly appears.

Before 1650 there were seven barber-surgeons in Massachusetts, so one author claims, while another says there were only three up to 1692. In 1700 the population of Boston was about 7,000. John Josslyn in "New England's Rarities Discovered" published in 1663, says: "Picking the gums with the bill of an osprey is good for the toothache, and scarifying the gums with a thorn from the back of a dog-fish will cure the toothache."

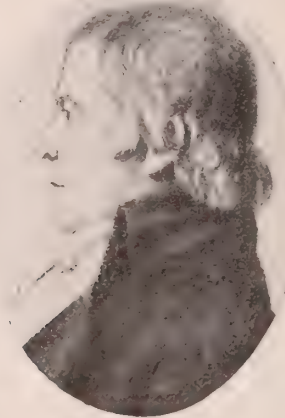
A Treatise on Choice Spagyricall Preparations, says: "Oil of cloves, organum, Purging Pills, and Resin of Jalap, are good for the toothache."

Giles Firmin, son of Giles Firmin, of Sudbury, England, matriculated in the University of Cambridge in December 1629 and later came to New England and practiced as a physician until 1644 when he returned to Old England. He knew how to *extract teeth*, bleed, blister and sweat in a truly professional manner, yet he complained that he found physie but a "meene helpe" in the new land. Many a poor salivated patient sacrificed his teeth to his doctor's mercurial doses; one such toothless sufferer, a carpenter, having little ready money, offered to pay in hay-rakes, which he made of green timber, so that after they were used a few days in the hot sun the teeth all fell out—same as his did—thus he had revenge on the doctor.

In regard to dissecting in Boston, the General Court said: "We conceive it very necessary that such as study physie or chirurgery may have liberty to read anatomy and anatomize once in four years some malefactors, in case there be such as the Court shall allow of."

John Baker and Sarah Hill were married in Boston by Rev. Benjamin Wadsworth, June 21, 1711, and probably this was the John Baker, dentist, who instructed Paul Revere. The latter was a colonial engraver who first

practiced on silver plate and afterwards on copper plate. Curiously enough he tried his hand at a set of notes for the Psalms, as appears by the following in the *Boston Gazette*, Feb. 4, 1765: "Just published and to be sold by Josiah Flagg and Paul Revere in Fish street at the north end of Boston, a collection of the best Psalm-Tunes in two, three and four parts, from the most celebrated authors, fitted to all measures and approved by the best masters in Boston, New England. To which are added some hymns and anthems: the greater part of them never before printed in America. Set in score by Josiah Flagg, engraved by Paul Revere." In the same paper for Dec. 26, 1768, appeared the following: "Whereas, so many persons are so unfortunate as to lose their fore teeth by accident, and other ways, to their great detriment, not only in looks, but speaking, both in public and private. This is to inform all such that they may have them replaced with artificial ones that look as well as the natural, and answer the end of speaking to all



Paul Revere L'el'

intents, by Paul Revere, goldsmith, near the head of Dr. Clarke's wharf, Boston. All persons who have had false teeth fixt by John Baker, surgeon-dentist, and they have got loose (as they will in time) may have them fastened by the above (who learnt the method of fixing them from Mr. John Baker)." Revere lived on Fish street and carried on the business of goldsmith, silversmith, engraver, and dentistry, so far, at least, as to make and set artificial teeth, then called a new invention.

Revere had a strong will, positive opinions, ready wit and was quick to catch the striking features of the hour: he had courage, tact, agility, and his "Midnight Ride" has been immortalized by the poet Longfellow. After the war he made metal teapots, pitchers, tankards, porringers, sugar-bowls, iadles and spoons which all bear his mark.

Revere made a copper plate engraving of the North Battery in Boston, which is now in the Historical Society: this plate was probably engraved about 1760. He also made an engraving of The Scence and Fort Hill. His well known engraving called "View of part of the town of Boston in New England, and British ships of war landing their troops, 1768," has this legend on it: "On Friday, Sept. 30, 1768, the ships of war, armed schooners, transports, etc., came up the harbor and anchored round the town, their cannon loaded, a spring on their cables, as for a regular siege. At noon on Saturday, Oct. 1st, the fourteenth and twenty-ninth regiments, and train of artillery with two pieces of cannon, landed on the Long wharf; these formed and marched with insolent parade, drums beating, fifes playing and colors flying, up King street, each soldier having received sixteen rounds of powder and ball. Engraved, printed and sold by Paul



Silver Work Made by Paul Revere.

Revere, Boston." He furnished the copper bolts and spikes drawn from malleable copper, by a process then new, for the frigate *Constitution* which was coppered with copper made by himself; the frigate was completed in 1797. The *Royal American Magazine* for June, 1774, has one of Revere's satires on the Port Bill, in "The Able Doctor, or America Swallowing the Bitter Draught." In the same magazine for April, 1774, is an engraving of the head and shoulders of Samuel Adams, copied from an oil painting by Copley.

In 1775 he engraved the plates, made the press and printed the bills of paper money, ordered by the Provincial Congress of Massachusetts, then in session at Watertown. He was on the committee which designed the plates for these bills which were of credit to the amount of 100,000 pounds, and

they proved substantial sinews of war. These copper plates are in the State Department at the State House in Boston, and the pistol he owned is in the possession of the Massachusetts Historical Society.

The following is from the Day Book of Revere: Feb. 7, 1763, Mr. John Copley, Dr., to a gold case for a picture for Mr. Nel—n, 3 L. 0 S. 0 d. To one ditto—weight, 5 pennyweights, 2 L. 4 S. 8 d. Feb. 18, 1765, Mr. John Copley, to a silver picture frame Mrs. St—gs, 1 L. 0 S. 0 d.

Revere designed nearly all of the solid wooden frames that surround Copley's pictures at the present time. Copley was an excellent artist and painted many pictures, among them one of Revere.

Colonel Revere erected an air furnace in which he cast guns and iron-ware, also the first church bell, which is still in the city. At a later period he erected works at Canton, twelve miles south of Boston, for casting and rolling copper and its amalgams. He was the first president of the Massachusetts Charitable Mechanics' Association, and he, with Warren, founded the Grand Lodge of Freemasons in Massachusetts, of which he was the Grand Master; he was also an incorporator of the Massachusetts Mutual Insurance Company.



Birthplace of Paul Revere, Boston, Mass.

In 1756, when Paul Revere was twenty-two years of age, he received a commission as lieutenant of artillery, and shortly after—1757—he married Sarah Orne, who died in April, 1773, leaving six children, and in the same year, on Oct. 11th, he married Rachel Walker, by whom he had eight children.

What is now Revere Place, off Charter street, near Hanover, was Revere's last home and his foundry was located on Foster street. In the midst of what is now the Italian colony is a landmark of historic value—this is the small, low, wooden house, hedged in by more ambitious modern structures, marked as the home of Revere; it was the versatile patriot's dwelling from about 1770 through the Revolution and until 1800, when, having prospered

in his business, he purchased a finer house on Charter street, near by, and there he spent the remainder of his days.

The tower of Christ church on Salem street bears a tablet with the following inscription: "The signal lanterns of Paul Revere displayed in the steeple of this church, April 18, 1775, warned the country of the march of the British troops to Lexington and Concord."



Boston, Park Street Church and Granary Burying Grounds.

The Granary burying ground in Boston was established in 1660, and here is interred the ardent patriot and ingenious mechanical artist, the messenger of the Midnight Ride, immortalized by Longfellow. The inscription on his headstone is as follows:

.....		
:	PAUL REVERE,	:
:	BORN	:
:	IN BOSTON,	:
:	JANUARY, 1734.	:
:	DIED	:
:	MAY, 1818.	:
.....		

In 1772 the Pearl Dentifrice manufactured by Jacob Hemet, dentist to Her Majesty, was advertised in Boston and applauded for its adaptiveness to preserve, fasten and beautify the teeth, and keep them from aching.

John Randall, who was born in 1773, practiced dentistry in Boston, and his success in crowning teeth was very remarkable.

General Warren was killed at the "Battle of Bunker Hill," and his body was identified by Doctor Jeffries, an M. D., because one of his upper incisors was broken off obliquely in early life. Another says his remains were recognized on account of a false tooth.

(To be continued.)

A METHOD OF REPAIRING A SHELL CROWN

By F. C. Furniss, D. D. S., Canal Dover, Ohio

It frequently happens that a hole is worn through the occlusal surface of a gold crown, especially in cases where the opposing tooth is artificial, and when the cusp of the crown is too thin.

By the following method it is really surprising to see the extensive repairs that can be made without destroying the contour and occlusion of the crown:

Remove the crown without slitting, if possible, though slitting is sometimes necessary. Remove cement; cleanse thoroughly in acid. Drill out thin edges and reshape with pliers; replace on tooth to correct occlusion. Remove crown, fill all openings with wax, allowing wax to protrude slightly within the crown. Fill crown with investing material. When investment hardens, warm slightly and pick out the wax. Pack gold foil in all openings, apply flux and heat well. Solder may then be flowed over the gold foil, completely closing all openings, and when ground and polished, the repair is practically invisible



DR. W. M. MILLER,
Treasurer Louisiana State Dental Society.

The portrait of Dr. Miller was unintentionally omitted when preparing the group plate which appeared as frontispiece in our August issue.

A DISCUSSION OF SEVERAL MISNAMED CONDITIONS OF THE MOUTH *

By J. H. Crawford, D. D. S., Pittsburgh, Pa.

WHY is it that with all of the literature which has been published in all these years upon the subject of Pyorrhea that we have made such limited progress in combating this disease?

In the opinion of the writer, the lack of progress is due primarily to lack of rational diagnosis. This lack of rational diagnosis is shown by the fact that we have been blundering along treating Pyorrhea as we found it, making no distinction in diagnosis, in name, in prognosis or in treatment between the several different conditions which we have commonly considered as Pyorrhea.

We have tried sealing the roots, we have tried the various mouth washes, we have tried some or all of the preparations on the market for the purpose of aiding the organs of excretion. In the end we have given up and said, "Pyorrhea is incurable." All this because of a lack of rational diagnosis.

Let us then, this afternoon, try to consider these conditions which we meet in the mouth as if we were rational, professional men, searching for the truth, instead of calling every abnormal condition of the gums or alveoli, Pyorrhea.

Let us start by giving to each of these conditions a name and a few facts concerning its location, symptoms, causes, treatment and prognosis by which it may be recognized and distinguished from the other conditions.

Let us eliminate from our consideration, first, that simple gum recession which comes from unwise horizontal brushing of the teeth. This is not a strictly pathological condition and needs mention only to clear the way for the proper classification of these pathological conditions.

This simple gum recession occurs on the labial portion of the necks of the cuspids and lower incisors because of their prominence and the fact that the gum is so thin and unsupported by alveolar process. It requires no special treatment beyond properly directed massaging and cleanliness.

Gum recession due to or associated with erosion of teeth is properly a subject apart from those under our consideration at this time.

These two forms of gum recession are sometimes branded as Pyorrhea, regardless of the fact that there is absolutely no sign of pus present. Is it right?

With the exception of these simple gum recessions all of the so-called Pyorrhea conditions may be separated into two groups, called Gingivitis and Alveolitis. Each of these groups may be subdivided into three distinct divisions in the hope that by taking one bite at a time we may be better able to digest what we take.

Let us then take up very briefly the Gingivitis conditions and try to differentiate between the different conditions in this group:

*Read before the Lake Erie Dental Association, May, 1909.

SIMPLE MARGINAL GINGIVITIS.

Location—In epithelial layer of cells of gum margin.

Symptoms—Redness, profuse bleeding. Gums sensitive to touch. No evidence of pulpal hyperaemia.

Causes—Margins of fillings and crowns, salivary calculus, bacterial plaques.

Treatment—Remove irritant and restore contact point and interproximal space. Keep clean until interproximal gum is restored.

Prognosis—Certain and prompt recovery.

SUPPURATIVE MARGINAL GINGIVITIS.

Location—Epithelial layer of cells of gingiva.

Symptoms—Redness, swelling, bleeding, pus. Gums not so sensitive to touch. Teeth more sensitive to heat and cold. Venous hyperaemia of pulp due to acid irritation.

Causes—Same as simple marginal gingivitis plus infection by pyogenic bacteria. *Streptococci* and *Staphylococci* in large numbers.

Treatment—Same as for simple marginal gingivitis plus use of cleansing sprays (Dr. Ferris') and a mild astringent (4% Zinc Sulphocarbolate) after all irritants have been removed.

Prognosis—Certain and prompt recovery.

INTERSTITIAL GINGIVITIS.

Location—In connective tissue cells of alveolar process and pericemental membrane.

Symptoms—Not much swelling of gum margins. Gum margins hug neck of tooth rather tight. More recession on labial and buccal surfaces than on proximal surfaces. Less pain and more sense of fullness. Tendency of teeth to protrude, rotate and separate. Teeth fairly tight. Definite boundaries to pockets.

Cause—Irritation by bacterial plaques or deposits upon roots under free margin of gum. Gum protects bacteria. Lack of resistance of tissue due to scarcity and small size of capillaries, malnutrition, malocclusion. In the few cases where blood pressure has been measured and recorded it has been below normal, but this test has not been applied in sufficient number of cases to make such record of definite value.

Treatment—Removal of irritant, whether of bacterial or calcic nature, spray and cleanse septic areas, fill with a 33% Bismuth paste. If accompanied by pulpitis, devitalize and fill. Biers hyperaemic treatment has given a more prompt response than any other, but owing to the fact that it is necessary to construct a special soft rubber vacuum cup for each case it has not been much used by the writer.

Prognosis—Slow recovery.

CHRONIC SUPPURATIVE ALVEOLITIS.

Location—Alveolar process; any or all surfaces.

Symptoms—Teeth sensitive to percussion, loose and in supraocclusion.

Gums sensitive, receded, and loose at neck. Venous hyperaemia of pulp. Gums bleed freely. Rotation, separation or protrusion of teeth.

Causes—Salivary and serumal calculus. Infection by streptococci and staphylococci. Death of pulp and subsequent alveolar abscess. Defective root canal fillings penetrating beyond apex. Margins of crowns and fillings. Traumatism, malocclusion.

Treatment—Spray and clean mouth. Inject Bismuth paste or pack pockets with Boroglycerid of Bi. Scale and polish roots. Remove remnants of dead pericemental membrane and any necrotic or carious process. Wash out pocket and fill with Bismuth paste. Frequently necessary to devitalize. Biers hyperaemic treatment will hasten the elimination of the infective bacteria from the deeper tissue, but will not remove any carious process or scale and polish deposits from the roots. After all irritation and infection has been removed an astringent may be used. Loose teeth may be retained by a splint if motion is of such an extent or nature as to cause tooth itself to act as a foreign body and irritant.

Prognosis—Teeth comfortable and useful in three days. Pocket healed in three weeks to three months. Permanent.

TUBERCULAR ALVEOLITIS.

Location—In Alveolar process, usually in anterior portion of maxilla.

Symptoms—Teeth slightly loose over necrotic area. Not abnormally sensitive to percussion. Pulpless teeth with sound crowns. Tissues overlying apices red and sensitive. Gum margin pink and firm but separated from neck of tooth at one point. Pus flows if pressure is applied. Pulmonary tuberculosis.

Causes—T. B. infection by circulation, never exists as a primary infection.

Treatment—Open, cleanse and fill root. Cleanse, scale and polish root surfaces and crowns. Incise gum at apical region, amputate root end and cut away all necrotic bone. Inject cavity with Bismuth paste and allow to heal by granulation. If teeth are too much undermined by operation, remove. Refer to physician for systemic treatment.

Prognosis—Slow recovery of local wound.

SYPHILITIC ALVEOLITIS.

Location—Alveolar process of maxilla or mandible.

Symptoms—Gums sensitive, dark red, swollen, bleeding, loose at margin. Festoon obliterated. Margin of process at buccal and labial, apparently thickened. Confined to one arch usually, with simple gingivitis on other arch.

Causes—Systemic infection.

Treatment—Spray and clean the mouth. Scale and polish the roots and crowns. Remove diseased tissues surrounding roots, wash out and explore for carious bone. Open, clean and fill roots projecting into cavity,

if exploration reveals cyst. Remove carious bone and any root ends which project into bone cavity with curettes and bone burs. Pack with Bismuth paste. Use and prescribe Zinc Sulphocarbolate after all retained infectious material has been removed. Refer to physician for systemic treatment.

Prognosis—Rapid recovery, particularly of soft tissues. Interproximal gum restored in a few days.

Now gentlemen, the writer is well aware of the fact that better names for these conditions may be devised, that more definite diagnostic symptoms may be found, that methods of treatment may be improved. In fact, these are the objects for which he is working.

Our great mistake is that because of lack of rational diagnosis we apply the same treatment to all kinds of gingivitis and alveolitis. We hear a man say that he has restored the interproximal gum tissue to normal position and condition and the tooth to functional activity in three days' time by simply planing the root and washing away the debris. We then expect to get the same results by the same methods in our next case, and, when these results fail to appear, we assume and say that the other man is a juggler of the truth. Instead of accusing, *diagnosc*. You may find that the cases are not similar, that the trouble is not on the root, but instead, that the root is *resting on the trouble*. In other words, that that pus cavity in the bone needs cleaning out; or that that necrotic bone needs curetting; or that that pus in the bicuspid region comes from the antrum; or that the syphilitic infection acquired back in the "wild oats" age has at last made its mark in the deeper bony structures; or that the pulp of that sound-looking tooth has given up the fight for life, and that this stream of pus is its funeral procession, taking the path of least resistance to the place where it can get the greatest revenge for our neglect of it.

There are a few general statements which may be applied to all of these conditions and it seems advisable to mention them here:

Medicines won't do the work which should be done with instruments.

We hear sometimes of the surgeon who stitched up a wound after operating and enclosed a gauze sponge. This is what we do when we prescribe or use an astringent before removing *all* of the deposits and necrotic bone and membrane.

In many of the cases referred to the writer for treatment, the referring dentist says, "I have sealed all of the deposits from the roots." In most of these cases this is not true. In most of the remainder of these cases there is necrotic bone present and the astringent which the dentist prescribed or used has caused the gums to contract and enclose it more tightly, producing even more irritation.

Loose teeth must be retained in place by splints of some kind if healing by granulation is to be expected. These splints may be temporary or permanent, but must in all cases be so constructed as to permit of proper *prophylaxis*.

Injection of cocaine is inadvisable and unnecessary. It seldom

reaches the really sensitive areas unless applied so that it carries the infection to other parts. The danger of spreading the infection should be guarded against in all ways.

The prescriptions for the various medicaments mentioned are as follows:

No. 1.

Iodine, gr. xix
Potass. Iodide, m. xix
Aqua Dist., q. s. ad. $\bar{5}$ iv

Sig. To be used as spray under high pressure at 98° F.
To stain and fix bacterial plaques.

No. 2.

Starch, $\bar{5}$ iij gr. ij
Aqua Dist., q. s. ad. $\bar{3}$ iv

Sig. Use as spray under high pressure, following spray No. 1.
To convert bact. plaques into Iodide of starch.

No. 3.

Sodium Carbonate, gr. viij
Oil Gaultheria. m. xxx
Aqua Dist., q. s. ad. $\bar{3}$ iv

Sig. Use as spray at 115° F.
To wash off Iodide of Starch and debris.

Bismuth paste.

Bismuth Subnitrate,	30%
White Wax,	5%
Paraffin (melting point)	5%
Vaseline,	60%

Mix while boiling.

Sig. Inject into alveolar pockets.

Boroglyceride of Bismuth.

Bismuth Subnitrate,	25%
Boroglyceride U. S. P.,	75%

Sig. Pack into alveolar pockets.

Astringent.

R Zinc Sulphocarbolate, $\bar{3}$ ij
Tinct. Cudbear, gtts. x
Aqua Cinnamoni, q. s. ad. $\bar{3}$ iv

Sig. Use as mouth wash for two minutes once each day.

While many details regarding each of these conditions have been omitted for brevity the writer hopes that enough have been mentioned to stimulate discussion and above all personal thinking and investigation.

RUBBER DAM IN DIFFICULT CASES

By Dr. Gustavus North, Cedar Rapids, Iowa

Where the cavity is near the gum margin on the labial and buccal surfaces of the teeth, it is often difficult to apply the rubber dam so as to keep the cavity dry.

Apply the rubber dam and secure it with ligatures down close to the gum margin of the tooth: then press both rubber and ligature down so as to expose all parts of the cavity, and hold it there until you dry the tooth with hot air; then bathe the tooth with alcohol and when the alcohol has evaporated the rubber will generally remain in place and the cavity can be filled without danger of moisture.

PREVENTIVE DENTISTRY—PROPHYLAXIS *

By Alice G. Harvie Duden, D. D. S., Indianapolis, Ind.

A FELLOW dentist confided to me the other day the fact that prophylaxis was rather getting on his nerves. He said he felt he could hardly get away from it, turn where he would, it almost pursued him, scarce could he find a dental journal these days but what had one or several articles devoted to it. Several colleges that he knew of, had devoted each a chair to that branch (why hadn't they thought of it when he was at dental college?) and two specialists were devoting most of their time to it in Indianapolis and seemed overwhelmed with work; they never seemed to have a quiet day, such as he himself had once in awhile—and only this last week two of his very best patients (he called them his STAR patients), had been in to ask if he couldn't give them some prophylaxis. They said they had some friends who were having prophylaxis treatment regularly, and as a result expected to have little or no more decay, and their mouths were beginning to look perfectly beautiful—that they themselves would like to have some prophylaxis, but didn't want to leave him if he could give them the treatment, as they had been his patients for so many years. He was very frank with me and said had it been some others of his patients he might have bluffed them a little—cleaned up their teeth and told them they needn't worry, their mouths were all right—but he said these were two very intelligent people—they had gotten hold of some literature on the subject and were pretty well informed. He had to tell them he had not been doing it and then they rather wondered why. He had no good reason to give, and told them frankly that if they were bent on having preventive dentistry (prophylaxis), they had better go to Dr. Blank, who was giving it, that inasmuch as he had not taken it up he wasn't going to experiment on them.

He confided to me that they were people whom he respected highly, and he knew they would still think a whole lot more of him even if he confessed to not practicing it, rather than if he tried to mislead them. They thanked him, expressed appreciation of his most honest advice, but, to his mortification he saw those two patients (they were together) marching their way to Dr. Blank's office. He said he had a fit of what is commonly called blue-funk. He knew in his heart that his patients had left his office through no one's fault but his own. He had at least been honest, his conscience was clear—but as for those two patients, if they were going for a course of preventive dentistry, well, the future for him, so far as they were concerned, didn't look very bright—all he had to offer them was restoration, nothing else—it was all he had been taught.

I comforted him as best I could, telling him that his outlook was most hopeful—inasmuch as he had reached that stage where he was keenly alive to the demands of prophylaxis—and that the insistence with which it demanded recognition was marvelous.

*Read before the Eastern Indiana Dental Association, May, 1909.

This particular man whom I have referred to represents but one of many in his class. There is a desire to give prophylaxis treatment because it is up-to-date, representing as it does the most advanced ideas in dentistry; and the best of the thinking people of the community are calling for it. There is, however, a better reason than that of simply being up-to-date, which requires prophylaxis from us. When the magnitude of the noble work has been grasped by one who will give a little time and thought to the matter it requires the stifling of a very painful conscience not to offer it to one's patients. The matter is a grave, a serious one,—let us look it squarely in the face. Have we the right to intimate to patients that they shall have no other service than that of restoration? I ask by what right shall we deny our patients *the best*, which is that of prevention of caries and all other dental troubles? Is it not, upon reflection, a cause for keen regret when we acknowledge to ourselves, our patients and to the world at large, the fact that we have little but mechanics to offer; that *patching* (whether it be a filling, a crown, a bridge, or a plate), is the aim and end of our efforts; that a patient presenting a cavity, a loss of teeth, or an edentulous jaw—brings joy to us, for we'll make a nice crutch for him to get along with for awhile—we will make a piece of something to imitate—a next best, why shall we not offer to him instead, *the best*—namely the conserving and preserving of his teeth to him forever; splendidly healthy gums; sanitary mouths. Why shall we not, when it is so comparatively easy? Give me one good reason and I will listen to you—it's beyond my comprehension, the unwillingness of any dentist to have the earnest desire in his heart to at least *offer* such conditions to his patients.

Do I hear someone say, "well what are we going to do for a living if we quit patching? Why! Give prevention, to be sure—and in maintaining and giving prevention to all of your patients you'll be kept so busy you'll be overwhelmed; you'll be kept much busier than you are now, if that be possible. I know some of you are awfully busy men; what I mean is, there will be even greater demands upon your time than you have at present, should you, for instance, undertake to prevent decay and conserve the teeth of all of your present patients; for please bear in mind that prophylaxis does not mean *one, two or three* treatments; it means at least ten treatments a year, once a month for at least ten months of the year. Will patients come? Oh, yes, of course they'll come—try them with a few treatments and then see if they are willing to go back to old methods. I know from a good deal of experience that they will not. You don't ask your patients to come with the fixed idea that they are not going to respond—instead you sort of take it for granted when you tell them what you want them to enjoy—and they'll come: you all, *everyone* of you, have some patients in your practice who would bless you for this privilege—mothers who will make all sorts of sacrifices in order that their children may be spared what they themselves have gone through; those of us who have been doing this work know whereof we speak.

Let me tell you of what a joyful practice I have. I am busy all day long with such a happy set of people—can you imagine a large practice composed principally of patients who have absolutely nothing the matter with their mouths—of little children being glad to come, of a dental chair having no terror for old or young—a short, pleasant sitting, lasting anywhere from thirty to sixty minutes, and the patient carrying away an appointment card bearing the time set for next month's treatment? Of course, in addition to this there are the pyorrhea cases of which I have many—but it's only a short time ere they are made well and eventually are placed on the prophylaxis list. And speaking of pyorrhea, how easy it is to cure and how much easier it is to prevent. How do we prevent it? Why, simply by prophylaxis. How do we cure it? By a simple extension of prophylaxis methods—for pyorrhea disappears before prophylaxis as the dew before the sun. Let us take a closer view of just what oral prophylaxis is, and how prevention in its fullest sense is brought about. You have, of course, made observation of the fact that self-cleansing surfaces of tooth structure never decay, i. e., barring natural defects in the enamel, pits, and so forth; in observing this fact you have the keynote to the solution, for prophylaxis aims to keep those parts of the tooth which are involved in the interproximal spaces (the un-get-at-able parts) just as highly polished, just as free from accumulations, secretions, deposits, etc., as the flat or self-cleaning surfaces. If we allow a patient to come less frequently than the regular monthly visit it is more than probable that decalcification has begun at some point due to lactic acid fermentation brought about by the non-removal of carbohydrates, i. e., particles of sugar and starches. No patient can thoroughly remove these deposits and accumulations himself—we must have co-operation—for without it, we will avail little.

I would here remind you that the average mouth possesses anywhere from twenty to thirty square inches of tooth surface; the patient can only successfully care for about two-thirds of this area—it is the other third, the un-get-at-able third that we work especially for—which we render highly lustrous and polished—so that no accumulations can find a foothold. This is the secret.

Could you see magnified the enamel of an average tooth, which has received *no prophylaxis treatment*, you would observe that it is coarse grained—a sort of sandpaper surface, which would offer an ideal foothold for all sorts of deleterious matter, including lactic acid which is the actiological factor in caries. Then if you view in the same manner the enamel of a tooth which has received a course of prophylaxis treatment, you would find it close grained, fine, dense, resistant to acid fluids and very brilliant, which polished surface offers no lodging place to the foes of the denture.

Have I made my point clear, I wonder? This leads me to a phase I must discuss with you. I wish I might pass it over, but my conscience won't allow me to, and that is what is commonly called *cleaning teeth*. The average operation of this kind consists of fifteen or twenty minutes' work; a

small brush or rubber cup loaded with pumice revolving on the engine, and then the patient is handed a mirror and told to look at the shining appearance of his front teeth. Poor patient, he does not know that the inbetween places, those vulnerable parts, where decay inevitably begins, have not been polished, that they are still loaded with decomposing food, collections and bacteria; he doesn't know that the distal surface of that third molar which may or may not have a fine piece of bridge work anchored to it, is in danger of a pyrrhoea pocket or caries, and that his breath is still heavy due to the infectious matter not having been removed. Such a cleaning is, to use harsh words and call a spade a spade, a delusion, a deception, and it reminds me of nothing so forcibly as the dirty school boy who washes just as far back as his ears leaving the dirty tide mark beyond. I cannot think of a better simile—better by far would it have been had we devoted the fifteen or twenty minutes to the care of those neglected parts in the mouth and let the self-cleansing surfaces take care of themselves.

How long do we take to give a prophylaxis treatment? Usually two hours, if we cover the whole mouth at the first operation. I find it is better policy, however, not to go over the whole mouth at the first sitting; take a half only, and if there is tenderness as a result of the first treatment, it is better to have the half mouth tender rather than the whole. Not that alone, but you will get a better fee for your work—a patient is much more willing to pay you an adequate sum for your labor when it consists of *two* operations, even if it takes up the same amount of time, than for one long operation. This brings me to the fee question; this work must be charged for by the hour at the same rate as your other services; you must not charge less, you will belittle it, for prophylaxis is infinitely more valuable to him than restoration. You will please not speak of it as cleaning teeth, for “cleaning teeth” conveys something so radically different to the patient's idea, from what a prophylaxis treatment really is, you will explain the meaning of the word prophylaxis to your patient at the first operation that it is a compound word made up of two Greek words—*phyllasso*, to guard, *prophyllasso* to keep guard before used by the ancient Greeks relative to the soldiers keeping guard over the entrances to the city—the outposts.

You will make that first operation such an interesting one that your patient is lost in wonder, at each turn he learns something new. You use no engine work in any part of the process, for by so doing you defeat the object, for it is by a cultivated sense of touch that we discern what we are doing, an engine reveals nothing to the tactile sense; it is a case of feeling and not seeing; you will give your patient such splendid instructions in the care of his mouth that he will place unlimited confidence in you and will feel that he has in you a true friend, inasmuch as you are taking the greatest pains in order to show him how to *prevent* decay; you will have every mother as she leaves your office arranging for an appointment for Mary and Tommy, and at her next visit her husband, she says, would like to have you go over his teeth in just the same manner. Aunt Mary, yes, and grandma,

if she has one tooth left, looks upon you as a godsend, and all, the whole family, want your services and want them quickly.

You will have your patient at the second visit look at you wistfully to see if you approve of what he has been doing for his mouth in the interval, and you praise, where you can; but the delinquent spots (which your eagle eye catches immediately on noting the morbid color of the gum), are condemned, and the patient feels he is at fault. At the third visit you have him bring his tooth brush and go through a sort of wash bowl clinic at the office; he is amazed at how much you still have to show him and correct him in. It is not a question of brushing *teeth*, not at all, it is brushing *gums*. I tell my patients that they need not fear, their teeth will not be neglected as they get taken care of in the tail end of the stroke, the idea is to have the free margins of the gums cared for where so much infection lies. The manipulation of the brush is known as the rolling movement; the *correct* way to use floss ribbon is shown, wrongly used it does more harm than good, rightly used it plays a much greater part in the prevention of decay than does the brush relative to the approximal surfaces. In giving instructions to patients and intimating what you require of them, one has to be very autoeratic in one's demands—the patient's co-operation in prevention is absolutely essential. You don't disguise the fact from him, either; he learns that it is possible only to have immunity by conscientious work on *his* part, as well as that of yours. Both night and morning care must be given in a scientific manner. Almost anyone can care for his mouth twice a day; where recession of gums is in progress this must be stopped at once and the tissues brought back to place by correct massage movements—it gives one the very greatest pleasure to watch the restoration of the gum tissues—to recreate those beautiful festoons. The patient was responsible for driving them away in the first place. Cross brushing cannot be condemned too emphatically; it is disastrous to gums and teeth both; the error of it is written so plainly across the teeth of almost every patient who presents himself for treatment; those deep grooves across the labial and buccal surfaces of the teeth—do you sometime question what brought them? Nothing but cross brushing. The brush started the groove, the lactic acid finding the groove lodges there, decalcifying the structure, continually making it deeper until the part has to be filled. The instruction the patient receives is quite an educative process for him, and please remember that none of this good advice, instruction and admonition is gratis; it is charged for by time, and it's wonderful how intelligent and apt he becomes in a very short while in the care of his mouth. I wish it were possible to give each one of you present a prophylaxis treatment in order that you might realize, personally, how delightful the mouth feels after such an operation.

A few words on technique, perhaps, is fitting, though practical presentation of the operation is infinitely more satisfactory. I use principally Dr. D. D. Smith's set of files for the instrumentation which is the first stage of

the work; next, wooden points are carried in portepolishers for the polishing process; don't use ordinary pumice, it's too coarse; use instead a flour of pumice put up by the Buffalo Dental Mfg. Co. This produces a very brilliant lustre; the polishing must be done *with* the axis of the tooth, next dental ribbon (not ordinary dental floss) is drawn through interproximal spaces, polishing two walls thoroughly in every space, not by any means an aimless pulling through, for these spaces are the vulnerable parts upon which we must dwell longer than any other surface of the tooth; following all of this must come the atomizers using anywhere from 40 to 60 pounds of pressure compressed air. Compressed air can be installed at very moderate cost. A water pump or an electric pump may be used, and a tank, a container which will hold 12 gallons may be had for \$12 or \$14. The spraying is a very essential part of the process, washing the debris from pockets and around margins in the most effectual way; it is that stage of the operation which the patient hails with delight. One last operative movement and the operation is done. This is the massage. I apply this as an object lesson only at the first treatment for after that the patient soon becomes expert at it himself. Massage along correct lines accomplishes so much. The utmost thoroughness is absolutely essential in this work. Without thoroughness we cannot accomplish prophylaxis prevention, we shall instead bring ignominy on ourselves, on our promises, and on the fair name of prophylaxis. It is not easy work, it is arduous, painstaking and exacting. The strain upon one's hand is very great, i. e., on a certain set of finger-muscles, but the glorious results bring their own reward. The usual expression of a patient as he leaves the chair is to the effect that his mouth feels perfectly delightful. Just one word on pyorrhea and then I must draw to a close. Sometimes one finds it hard to decide whether or not it is justifiable to extract, where the teeth seem to be pretty loose. A good rule to go by is, should you get a rotary movement of tooth, condemn it to the forceps without hesitation; if only a lateral movement, proceed to give treatment, with the object of restoring. The rotary movement denotes loss of bone structure and terminal bone structure cannot be reconstructed, while it is a comparatively easy matter to reproduce gum tissue.

We all know, of course, who is the father and author of our present systematized prophylaxis—Dr. D. D. Smith, of Philadelphia. I was honored by an invitation from Dr. Smith five years ago to come and see what he had to show us. I went from Boston along with five other practitioners, and during those two days' sitting at the master's feet, I saw upwards of forty of the most beautiful mouths I had ever looked upon, dreams of loveliness. Dr. Smith's patients come when he bids them, so grateful are they to him. I tell you, one cannot look in upon a prophylaxis practice and see such a glorious sight without coming away with the desire, no, the determination to give prophylaxis the first rank in one's practice. I confess to you that six years ago at the beginning of my interest in the work, previous to my going to Dr. Smith's office, I looked upon prophylaxis (prevention) as

a sort of visionary, impractical dream, and thought that where theory ended and the practical began it could not hold its own. It was, in other words, too impracticable, it was altogether too much of idealism. But a visit to Dr. Smith's office forever silenced such thoughts and now after upwards of six years of persistent following of prophylaxis with a practice composed almost entirely of this work and pyorrhea, I have abundant proof in the many mouths to show, should you care to come, that would convince the most skeptical that we *can* and do *prevent* decay and at the same time bring about such a change in the appearance of the mouth it is beautiful to behold; a prophylaxis mouth is an everlasting joy. Compared with prophylaxis, the other kind of dentistry, *restoration*, seems to be so inadequate, so inefficient, in a way it seems as if we had missed our goal.

Prophylaxis is coming into its own. Several colleges have devoted chairs to the subject; there is scarce a large city but has either special practices devoted to this work, or else it is a department of a large practice. Prophylaxis has taken up its permanent abiding place with us. Won't you identify yourself with it?

THE NECESSITY OF POPULAR DENTAL EDUCATION *

By A. C. Runyan, D. D. S., South Haven, Mich.

IN CHOOSING this subject I have taken in mind the fact that there seems to be a general awakening among the laity to become better posted in all branches of learning, particularly along the lines of medicine and surgery. A great many of our best home periodicals have sections devoted to health hints edited by very prominent and successful medical practitioners.

The *Youths' Companion* has for years had a column on its last page devoted to medical and surgical information. The March 25th number devotes a whole page to its Staff Series. "The Popular Health Article," by Dr. Thomas L. Stedman, from which I will quote more or less, is in this paper.

The *Saturday Evening Post* has had some particularly interesting health articles that have appealed to dentists, especially those in regard to mouth breathing.

In Dr. Stedman's article he says, "The public has the right to study medicine as well as legal or any other science." For a long time the doctors fought against this assumption of a right to knowledge on the part of the laity. All this is past or passing. The physicians could not deal in mysteries if they would and few would if they could. It has also come to be fully recognized that the public is fully able to comprehend the main facts and even the theories of medicine.

As was said recently by the president of the American Medical Association in his annual address before that representative body,—“There is

*Read before the Southwestern Michigan Dental Association, April, 1909.

no essential truth of medical science—or any other science, for that matter—which cannot be put before the public in terms of the rest of its knowledge,” and he urged the imparting of medical knowledge freely and fully to the people.

There has not been a dental society meeting of any importance for a number of years but that this subject has come up in some form or other. At the National meeting of our society at Minneapolis, in 1907, a committee was appointed to prepare something of general information on Oral Hygiene. The report of that committee appears in the December number of the *Dental Cosmos*. On page 372 of the March number of the *Cosmos* there is this announcement,—The N. D. A. Pamphlet on Oral Hygiene, entitled “The Mouth and Teeth” is now ready for the profession at so much per Now, the question is, how are we to get this information to the people? There is no one who has spent any time in practice but that deplores the fact that thousands of teeth might have been saved, and many serious facial deformities could have been avoided, had parents had just a little knowledge of Oral Hygiene. The report of the examination of the mouths of fifteen thousand school children in the public schools of Ann Arbor by Russell W. Bunting, D.D.Sc., published in the March number of the *Cosmos*, shows the deplorable condition existing there, the home of one of the leading dental educational institutions of our country.

What does this teach us?

To me it shows that we are not getting to the people soon enough, nor in the right way.

A noted Catholic bishop has said,—“Give me the first ten years of the religious training of a child and I will risk the balance of his life.” This, to my mind, is a very significant lesson of what early teaching will do. You remember about twenty-five or thirty years ago the W. C. T. U. had the evil effects of alcohol introduced into our school text books. In the meantime these pupils have grown up and have become voters. Now you have seen the result;—over three-fourths of the territory of the United States is prohibition today.

But how are we, as dentists, to get information to the people? One way would be,—have every society make an appeal to the N. D. A. to insist on more space and better subject matter devoted to Oral Hygiene in our school text books. Another way is,—the bringing of the matter by the State Societies forcibly to the notice of State Boards of Education and local societies to interest their School Boards.

Those of you who have access to the *Youth's Companion* may have noticed in the March 11th number the following, which I copy in full: “The first state conference on the care of the teeth has just been held in Boston. For a week, noted physicians, dentists and educators from different parts of the country discussed the matters of Oral and Dental hygiene from various points of view, with a purpose of bringing it before the parents, teachers, social workers and philanthropists. There is probably no

other matter so important to the health of children—or adults either—as sound teeth and a clean mouth, nor any other which is passed over so carelessly by parents.” The purpose of the conference was to point out the evil and suggest ways to meet it. Those who have given most study to the matter are agreed that eventually the city, or town, or state must provide for the dental inspection of school children and for the extraction, filling or other treatment of their teeth.

When, before this, has there ever appeared in a popular journal as much dental information as that?

Dr. Osler says, and his words are timely, “If I were asked to say whether more physical deterioration was produced by alcohol or by defective teeth I should unhesitatingly say, defective teeth.” (*American Dental Journal*).

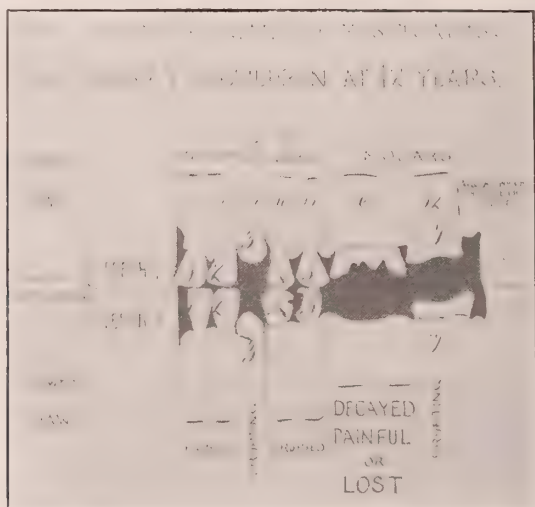


Fig. 1.

While I do not wholly agree with the following, quoted from the same journal, on prophylaxis, I do believe that the dentist fails in his duty to his patients when he does not impart all the knowledge possible for their benefit. Dr. F. P. Corley in the *Cosmos* says, “The average dentist knows little of prophylaxis, cares less, and tells his patients nothing. The average dental college teacher knows little of prophylaxis, cares less, and tells his students nothing. The average association habitue knows little of prophylaxis, cares less, and tells his fellows nothing.” To how many of this society does that quotation apply? Of course, we are all busy trying to repair the injury caused by ages of neglect, but we must do more than this; we must do constructive work as well.

On the principle that an ounce of sight is equal to a ton of print, I will, by the aid of the stereopticon, show some of the conditions that arise from early neglect of the teeth and prove why popular dental education

is so necessary. I have had these slides made from cuts and models bearing on the subject. While some of them are not as good as I would wish they illustrate the main point very well.

Figs. 1, 2 and 3 are made from cuts taken from "Popular and Little Drawings," illustrating "The Teeth in Health and Disease," by Frank Harrison, M. R. C. S. (Eng).

This cut represents the condition of the mouth of eighty per cent of the children at the age of twelve years. You notice there are only four teeth that properly occlude. The first permanent molar is badly broken down and may be past repair, the second or twelve year molars are not

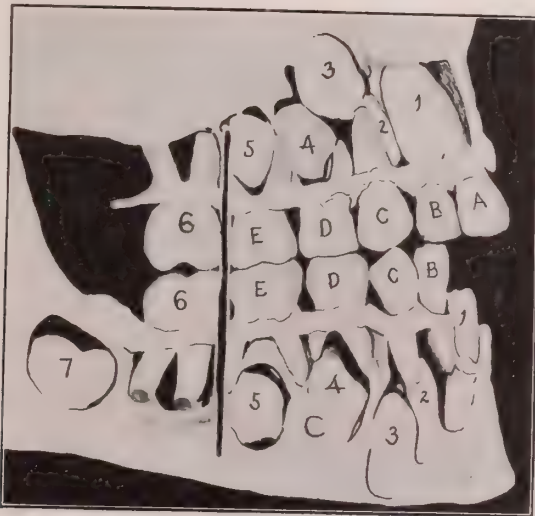


Fig. 2.

sufficiently erupted to be of any material benefit and the teeth are in different stages of development. Is not this a deplorable condition just at the age of adolescence, when the human system needs every means to properly tide the growing child through this critical period in its life? Think of it, ladies and gentlemen, eighty per cent of the children of our land are going through this period with no better means of preparing their food for assimilation than those few illy developed teeth. Besides that, the probabilities are that there are several putrescent pulps or decaying roots of temporary teeth that are discharging their offensive secretions to be mixed with the saliva and taken into the system. Is it any wonder that we see so many anaemic and apparently half matured children at this age? Any practitioner, within the range of my voice, by giving the matter a little thought knows that this picture is not overdrawn. Is it not time that parents begin to know? Who is to teach them if not the dentist?

Fig. 2 shows the normal dentition at seven years. We all know how seldom it is that we see a mouth in this condition, and we never will until parents are taught that the temporary teeth are of as much importance as

the permanent ones, and really are of more importance to the beautiful and symmetrical development of the human face. How are parents to be taught this? I know of no other way than by a propaganda of thorough dental education through our school text books and popular home journals.

Fig. 3 is a drawing of a microscopic section of a tooth, showing the

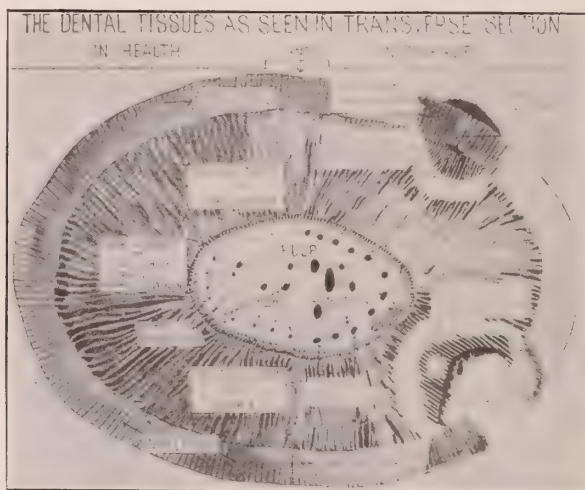


Fig. 3.

process and progress of decay. This shows the plaque under which the germs first make their attack and work their way through the enamel prisms, then attacking the dentine and finally reaching the pulp, causing

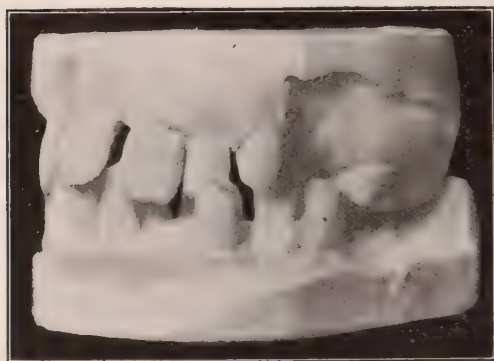


Fig. 4

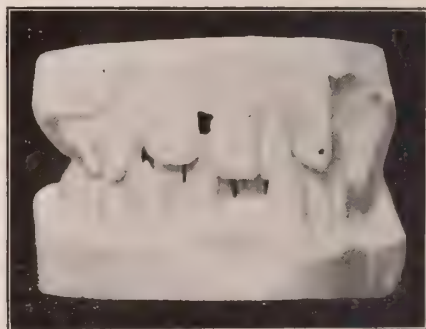


Fig. 5.

toothache and death to the parts. I show this to teach how necessary are the hygienic and prophylactic methods now used, and we should be able to tell the public these things.

Figs. 4, 5 and 6 were taken from a model in actual practice. They show the evil results of tooth extracting, of both the temporary and permanent sets in the same case. First, the temporary molars have been removed so

that the permanent ones have moved forward, causing the cuspid to erupt out of the arch. Then, there have been permanent ones removed here and



Fig. 6.

there so there have been no antagonizing back teeth, and this is the final result: Some of the incisors occlude anteriorly and some posteriorly. What right has a person with teeth in that condition to impose himself on society



Fig. 7.

in this enlightened age? Still, there are many who are, through the ignorance of their parents. We owe society our best efforts, are we responding?

It matters much to a child whether it grows to manhood or womanhood with deformed features. Fig. 7, taken from Dr. Williams' article in the

last DENTAL SUMMARY, shows the care of a badly deformed face, the result of irregularities of the teeth caused by mouth breathing superinduced by adenoids. Many a person has been obliged to go through life suffering both mentally and physically from such a deformity as this, because the parents did not know that by a very slight operation and the watchful care of a dentist that such deformities could be avoided. It is true that our orthopedic surgeons are now able to correct such deformities, but how much better would it be if such cases were prevented.

I wish to make a plea to every dentist that he do everything in his power to help develop a means of thoroughly disseminating a more thorough knowledge of Oral Hygiene and Dental Prophylaxis to the laity in general.

DISCUSSION.

Dr. S. E. Dodson: I do not feel there is any room for argument on this question. All who have heard Dr. Runyan speak must agree with me when I say that he is certainly doing a vast amount of work for good, and I think you will further agree when I say the rest of us are too lazy to do the same thing. There is a great deal of work of this kind that should be taken up, and should be taken up at once. It is up to the dentists here and throughout the state to do this work. The doctor speaks about some of these cases that could be prevented by treatment in early life. I don't know how many of you are aware of Dr. Angle's classification and causes of irregularities. The figures given by Dr. Angle declare that 65 per cent of the cases of irregularity belong in what is known as Class I, Angle's classification. To illustrate that a little more fully, I will state that 95 per cent of all the people we know have mal-occlusions all the way from a slight irregularity to such as you have just seen on the screen, which is a very bad case of class III. If the first teeth are preserved, which they can be—and I do not believe there is a man in the room but will agree with me when I say that all of the temporary teeth can and should be saved—if you can save these teeth, and if you stimulate them with polish and massage and various other methods that you can apply to them in early life, you will probably have a better chance of getting a full development in the size of the arches. If you get a full development in the size of the arches for the temporary teeth and get developmental spaces between the temporary teeth at the right time you will do away with 65 per cent of the irregularities that we meet. Have you stopped to think of that? Have you stopped to think how much irregularity could be prevented by simply treating the deciduous teeth? Sixty-five per cent. Why? Because 65 per cent of all cases fall in class I, and almost all the cases in class I are due to simple lack of development or premature loss of temporary teeth. The means at hand for this preventive care are limited to a man's practice. I don't suppose everybody can have someone in his office to do prophylaxis for him as a specialty, but there is no man who cannot take a little time and an orange wood stick and some pumice if he wants to. So I say it is up to you as dentists to prevent 65 per cent of these cases. If you cannot do that, if you do not get the patient in early life, there are a great many of these class I cases further along in development that can be treated before the permanent teeth have erupted, where the principle of expansion can be applied to the arches by using a simple appliance that will prevent many of these cases to which we refer, and, treated by an orthodontist at this time many can take advantage of the treatment who would be barred at a later period on account of the cost.

Orthodontia, as it is today, is a sort of a luxury. It might be called a rich man's game because he does not have to count the cost. I think if dentists were to take a little more interest in this subject and become a little more enthusiastic about it they

would do a whole lot towards prevention. There is a great deal of work that could be done, and I want to commend Dr. Runyan for the effort that he is making to bring this before the public. It is not so much the public as the dentists who need waking up. I think it was two years ago I promised myself that I would get some of these slides that I might help Dr. Runyan in conducting this missionary work. I meant it all right, but I haven't done so.

Dr. W. O. Vallett: It would be a good thing for the different societies to invite Dr. Runyan to come there and at the same time invite in the high school and primary teachers and the various teachers to the lecture and in this way there would a great deal of information be gotten to the children on the subject. I am going to try and induce Dr. Runyan to come to Goshen to the meeting to which you are all invited, and I am going to invite in all the school teachers in the city and insist upon their coming and hearing the lecture.

SOME PRINCIPLES OF RETENTION IN ORTHODONTIA

By **Martin Dewey, M. D., D. D. S., Kansas City, Mo.**

(Continued from page 729, September Summary.)

I HAVE tried to tell you what I understand to be the natural forces of retention and to impress upon the younger men their importance. It is to the younger men that I am writing these articles, for I have learned the follies of trying to teach those who have been "doing things that way for twenty years," even if their ideas were so hazy that they could not make a clear statement.

In taking up the question of mechanical retention, I will first define the different types, as I understand them. To refreshen your minds I will state that mechanical forces of retention are those forces which are exerted by some constructed appliance or apparatus. This being the case, it is needless to say that these retaining devices should be constructed in accordance with the laws of mechanics and physics. If this was all we had to contend with the problem could be solved without much difficulty. We have more than the above factors to consider, as teeth are retained with an idea of allowing nature to do her work properly. Then, we have to consider the forces of mastication and the limited space in which we have to work, to say nothing of hygiene. However, I will deal only with the mechanical side of the question in this article.

In describing the forces of retention, I will, as far as possible, follow the plan which has been used in describing anchorage, in order to avoid confusion.

Simple mechanical forces of retention are those which are exerted by means of a mechanical device from a tooth which has not been moved to hold a tooth which has been moved. In speaking of this form of retention we could call it simple retention with the same idea in view as we have when we speak of simple anchorage. It is the simplest arrangement that we could think of. One tooth has been moved, and in order to hold it, we attach it to some tooth which has not been moved, the firm tooth being as near to the moved tooth as possible. The device may be one of several. In some

cases it could be a ligature encircling the two teeth; in other cases a band and spur; but whatever appliance is chosen, it should conform to certain laws which I will lay down later.

Regardless of how delicate or how crude the appliance may be, if a firm tooth be made to hold one that has been moved, the force will be one of simple retention. The advantages of this form of retention is the ease with which it can be constructed. Having a firm tooth as the base of attachment, the tooth that has been moved can be retained very easily; that is with a very simple device. The reason why this form can not be used to any great extent is that we seldom have the firm tooth to which to attach our appliance. Very seldom do we find a case where we are able to produce proper occlusion by simply moving some of the teeth and leaving the others solid as they were before the case was regulated.

An example of simple retention would be found in the case of a canine which had been moved distally, and was retained by passing a wire around it and the first premolar, which had not been disturbed. Or, a lateral incisor, which for some reason had taken a position of torsal occlusion, there being space sufficient to rotate it without disturbing any of the other teeth, could be retained by an appliance which would get the force from either the canine or the central incisor. As the cases just referred to are very rare, it then follows that the conditions which would demand the use of simple retention also would be rare.

Reciprocal mechanical forces of retention are those which are exerted in such a manner that two or more teeth are retained by the same appliance; the force required to hold one in the line of occlusion is reacted upon the other with the same purpose in view. In this form of retention all of the force is utilized; all teeth having been moved; they are retained by the same appliance and force. It is at once seen that with reciprocal forces of retention, if they are properly applied, the appliances can be greatly reduced, because all of the force exerted will be used in holding the teeth which demand holding. This is exactly the reverse from what we find in simple forces of retention, as in that case as much force is exerted on the firm tooth as is exerted on the tooth to be retained. Therefore, reciprocal retention has the following advantages: (1) All of the force is utilized in maintaining the teeth in the position intended; (2) The smallest possible appliance can be used, as the entire appliance is active, while, in simple retention, that portion of the appliance which is attached to the firm tooth, as well as the reaction of the force, is unused, when considered in the true light of mechanics of retention.

If you were careful in noting the definition which I gave for reciprocal retention, you may have reasoned that the forces would admit of a subdivision, which I mentioned in the first article, viz; primary and compound reciprocal retention.

PRIMARY RECIPROCAL FORCE.

Primary reciprocal force of retention is pitting the backward force of one tooth against the backward force of another. This is a simple means of overcoming the action by the reaction. A crude illustration of the same force would be to take two boards or planks and, placing the lower ends some distance from each other and inclining the upper ends until they touched, the planks would stand, one supporting the other. The tendency of one to fall in one direction would be counteracted by the tendency of the other to fall in the opposite direction, provided that they were of the same size and weight. The principle of primary reciprocal retention is the same as pitting the tendency of one plank to fall against an equal tendency of the other. This example may be crude and simple to some, but it is the principle that can be utilized in a great many cases of malocclusion. For example, if the centrals have been moved in opposite directions, the backward tendency of one will act in holding the other, and, as a result of the action and reaction, both will be held.

This form of retention is not limited to the centrals, but can be applied to any teeth that are close enough together to make it practicable. Neither is it limited to teeth which have been moved in the opposite direction, for by the application of a little device which I will mention later, teeth which have moved in the same direction can be made to retain each other by utilizing the backward force for each.

COMPOUND RECIPROCAL FORCE.

Compound reciprocal force of retention is the pitting of the backward tendency of two or more teeth against other teeth. The advantage of this form is that the backward forces are analyzed, and the mechanical retainer constructed so as to utilize all of the backward forces and the reactions. If this is done the retaining appliance will be of much less bulk than if each tooth and backward tendency were treated separately and individually.

Dr. Angle, in the sixth edition of his work on Malocclusion, calls attention to the fact that the force of the fibres of the peridental membrane can be taken advantage of in the construction of retaining appliances. Therefore, in the application of the principles of compound reciprocal retention, we not only take advantage of the force of the peridental membrane of one tooth but of all of the backward tendencies of all the teeth and pit one against the other. Another feature that is an advantage from the purely mechanical standpoint is that a number of teeth can be retained and the appliance attached to only two teeth and often to but one tooth. This form of retention then makes it possible to eliminate some of the bands which have been used in times past with a detrimental effect upon the final results. That it is important to eliminate bands whenever possible is conceded by a great many, and I will deal with that phase of retention when speaking of the construction of mechanical retainers.

OCCIPITAL FORCE.

Occipital force of retention is that force which is derived from the occipital region. It possesses the advantage of having a firm point from which to obtain the resistance necessary to overcome the backward tendency of the teeth. Wherever the term "backward tendency of the teeth" is used, I mean the tendency of the teeth to return to their former position of malocclusion regardless of whether this returning tendency be mesial or distal, buccal or lingual, or any of the other seven positions of malocclusion. Collectively they will be referred to as the "backward tendency." The disadvantages are many, some of which are unsightliness, bulk, inconvenience; to these may be added the fact that we have forms of retention which will accomplish practically everything the occipital force does. A place where occipital retention still is useful is those cases in which the teeth are supposed to have been depressed, and we wish to retain them in that position. I say supposed, because I have never been fully satisfied of the practicability of depressing teeth by any means except occipital anchorage, and then the amount which they are depressed is a question in my mind. I can conceive of no other condition where the occipital force would possess an advantage over any other force.

(To be continued.)

PREVENTATIVE ORTHODONTIA *

By C. B. Blackmarr, D. D. S., Kalamazoo, Mich.

WHEN I received an invitation from your very congenial secretary, to write a paper for this meeting, I concluded that I had done a lot of missionary work in this part of the country, especially Kalamazoo, in trying to get the dentists, and people, too, to begin to see that Orthodontia meant a good deal to the patient's welfare, and that I had given several papers to you on this subject, so this time I better give you something on preventative Orthodontia.

The idea today is to find out the cause of abnormal conditions and remedy the cause rather than to doctor the effects. There is a cause for headaches; there is a cause for deformed mouths, teeth, etc., and the doctor who tries to find the cause of the headache, or the mal-placed teeth, etc., is the one who is doing the most good today.

General practitioners, as a rule, have, until recently, been very jealous, suspicious or the like of specialists—and generally they could not see how they could turn over one of their patients to someone else. Today the surgeon is known by nearly everyone to be capable of securing better results than the general practitioner of medicine and patients are sent easily. Today Orthodontists are beginning to be known by the better class of dentists as securing results that they are not able to obtain themselves. Also the prophylactists in the same way the rhinologist the mechanical

*Read before the Southwestern Michigan Dental Association, April, 1909.

dentist, the diagnostician, and if each is used properly, the general practitioner is benefited, and the patient, too, and the patient has a better respect for the general practitioner, and the specialist also, and the patient thinks more of himself. You all know where the teeth do not occlude properly, your fillings do not remain so well. Also that where the teeth are not normally polished—polished as a Prophylactist is able to—that your fillings do not do the service you expected of them. You also know that where the patient is a mouth breather your fillings do not do well. You know too that where the patient's general health is not good your fillings suffer, and so on, and so now as I said before, I feel that I have done quite enough missionary work here on the subject of Orthodontia, and after turning over the practical practice to my two young friends, Dr. Abell and Dr. White, I will try to tell you how to avoid sending some of your patients to them. Most of the older patients I suppose you ought to send to them. Of course, you all think it a pitiable sight to see a child harnessed up in a regulating appliance and I am going to try to show you how you can avoid some of these sights. This calls to mind an incident that happened while I was visiting Kalamazoo on Orthodontic education work. One little girl who had never seen an appliance on any one else, was going on a trip to Chicago and she and her mother were chagrined that she had to wear the appliance away from home. On the train as they neared Chicago, the little girl saw another little girl with appliances on, and they were friends at once. The second little girl's mother was a society lady and she inquired of No. 1 who her father was; how wealthy, his business, etc., saying, "Your papa must be wealthy or you could not be wearing a regulating appliance." And so the Kalamazoo girl, upon her return, said to me that she had found out that in Chicago it was not a disgrace at all, but rather a representation of wealth, a pretty toney thing.

As we see each other, here and there, what strange sights we are to each other—one has protruding upper teeth, another has a bull dog lower jaw look. One has big red, thick lips, the other thin and white. One has pimples all over his face, the other has a clean beautiful complexion. One has a good normal nose, the other a little pug nose, not fairly big enough to breathe through, and so on. Now there is a cause for every condition. One has constantly a cold in the head, the other is free. One has dirty ears, eyes, finger nails, etc., the other not; and we can do no better than to study the cause of the bad things we want to get rid of in ourselves and in our patients. I read an editorial in my home paper last week, right in this connection, that I would like to read to you:

TEACHING RIGHT LIVING.

Dr. Strong, in presenting her report on the essays in the Patriot's prize contest, felt it her duty to criticise the public school course of instruction in physiology. She said: "Physiology as taught in our public schools is not up to date."

Most human ills are directly attributable to ignorance regarding the care of the body. Most men and women do not know how to clothe and feed themselves rationally; do not know how to live sanely. Conventionality imposes silence regarding many of

the wonderful functions of the human body. Boys and girls are often allowed to learn of the divinely wonderful mission of the temple which God created for the habitation of their souls from ignorant and polluted lips, to their serious injury.

The matter of medical inspection of school children, of closer relations between the teaching and medical professions, is a pressing one, to which the Patriot hopes the board of education is giving due consideration. Medical science is rapidly proving that more and more of the disease which afflicts humanity is unnecessary—that it has its beginning in ignorance and is perpetuated by neglect; and at best medicines are but shiftless substitutes for knowledge and prevention. “Common colds,” which are often the parents of serious ills, are communicable; typhoid fever is due to dirt; the dreadful diphtheria and the most terrible and insidious of all human ailments, tuberculosis, can only be had from germs thrown off by some diseased person. The backwardness of many pupils is due to ill health, eye strain, or gross violation of the simple laws of health.

It is even more essential that the schools turn out not only healthy children, but children who know how to care for and preserve their health, than it is that they should be “smart.” For no full success in after life is possible without health, and perfect health is attainable through knowledge. Ordinarily it is acquired in the dear school of experience.

The Patriot would like to see the doctors and the teachers working together for the accomplishment of the sound mind and the sound body. It has previously expressed the hope that the medical society and the school board could arrange for medical inspections. The physicians could well advise with regard to the text books on physiology; and a world of good would come from monthly lectures to the pupils of proper ages. A man physician could speak with the authority of knowledge and experience to the boys, and a woman physician to the girls. There are more things in heaven and earth than are laid down in the physiologies, and there are things necessary for health, happiness and moral and mental development which are not laid down in text books.

What strange things we see people do. Right in my town there is a dentist, a graduate of the University of Michigan, who allowed his little daughter's teeth to decay so badly that he has a Logan crown on her left lateral root, and she is only 12 years old, and is being sent to Chicago to have instruction in singing. Does he not realize that not a singer of note has a defective dental apparatus? I know of a young man who has been sent to Europe several years to have his voice cultivated for Grand Opera music, who allows moss to grow all over his teeth from lack of care. I know of a girl in Kalamazoo whose mother was told by three physicians here that if she had three supernumerary teeth removed from the roof of her mouth, that she would bleed to death. I know of a very wealthy man's daughter who has one of the most ungainly noses I ever saw that is caused entirely by mouth breathing and impure air. I know of a young man going to Cornell, spending \$3,000 a year to become one of the best educated lawyers in the country, and yet his mother does not think it important at all to have his teeth attended to, when his mouth is so mal-formed it is with difficulty he can close his lips together to pronounce words. Just think how he will be hampered as a lawyer with such an imperfect speaking apparatus, when he could have had it remedied very easily when young.

Everywhere we go we see weak, puny children, hideous shaped noses,

mouths, chins, lips and mal-placed teeth, all due to heredity, bad habits of parents and children. I know of a very wealthy lady of Baltimore, Md., who told me that she had never looked into her little daughter's mouth at all; that she had not seen her teeth before I showed them to her when she called upon me to relieve pain in the little girl's mouth.

Why, it would seem sometimes like Topsy of old, that the children "Never had a mother at all; never were born." We see mothers fixing up their children in dainty pink and blue and white clothing, manicured finger-nails, perfumed clothing, while in the little mouths are decayed teeth, rotting tonsils, etc., that would not be tolerated for a second if placed in their hands. I know of a society lady and her husband who had their daughter's tonsils and adenoid tissue removed simply because the little girl snored so loudly by breathing through her mouth (of course, from the diseased air passages) that the people could not play whist and bridge down stairs—but refused to have her teeth put into position so she could masticate with them, because it did not seem necessary, to say nothing of the girl's looks.

Now, my point is this: That we ought to notice the habits of our little patients more closely, and to see to it that they are doing rightly rather than wrongly and thus save so many from having mal-formed mouths, lips, noses and faces. You all know what mouth breathing, thumb sucking, finger sucking, tongue sucking, the rubber comforter sucking, the holding of rubber tipped pencils between the teeth, the premature extracting of the temporary teeth, etc., will do to the position of the teeth, the shape of the nose, jaws, lips, etc. You all know what enlarged tonsils will do; you know, too, what nasal obstructions and adenoids will do. You all know that an abnormally developed fraenum of the upper lip will cause the two upper centrals to separate and so on. All you need to do is to notice these little things and remedy them, and thus avoid having so much done with windless appliances, etc., later on.

Now, beauty in children is only an expression of the Divine. Whoever could imagine an angel with an ugly shaped face. We are taught often that we shall recognize faces in heaven as they were on earth, but just think of it, gentlemen, what a homely lot of angels we are allowing to go to heaven by neglecting to do our duty to those with crooked jaws, etc., while they were on earth with us.

And if the supposition be true that only the beautiful are allowed in heaven, just realize the great number of children you are barring out.

DISCUSSION.

Dr. F. E. Williams: The name or title, "Preventative Orthodontia" can hardly have any significance to one, other than what its term implies, and in one diagnosis of it we may seem to arrive at the wrong conclusion; but presto, "white is white and black is black" and what can a person do who is to open a discussion on a subject and is vouchsafed the explanation only as far as two words? I have been told, as in my own case, it is bad enough not to submit a copy and give a man no longer than six days or a week in which to prepare a few words in the discussion of a subject more

or less familiar to us, but to receive a copy not at all, it does seem to leave one somewhat in the position of the Irishman when the tired and weary physician laid his head on said Irishman's breast and instructing him in the meantime to slowly count, and after the lapse of some time the physician heard the faithful Emerald counting "thousand sixty-six, thousand sixty-seven——."

"Preventative Orthodontia"—Now one might interpret that to mean to prevent Orthodontia, or to prevent the correction of mal-occlusion of the teeth, and as I do positively limit my practice to the correction of mal-occlusion of the teeth, then to have that correction prevented would work upon myself a serious hardship. On the other hand, the field is prevented enough as it is from indifferent results through lack of thorough preparation, complete diagnosis of the case, and serious attention to its correction. The term chosen by Dr. Geo. Zederbaum, of Charlotte, "The Education of a Nation," in the April SUMMARY, as to its breadth and world of meaning, would apply to our class of work with significance; for the masses must be educated along these lines as in all others—and more so, for is not "articulation" the foundation upon which we build all practice of dentistry? And if the people realize through our efforts the fact that a little correction—for looks' sake, if you will—will not do them any good in the long run any more than it will if a dentist does the best he can for them in the matter of correction; if he does not enlarge both the arches and get the ideal line of occlusion and actual articulation. For, in the first case, the teeth not being in correct occlusion will help force one another out of occlusion as they did at first, for when they were erupted they took their position the best they could without our help, so we must make complete correction, and nothing less, and with the loss of not a tooth. In the second case, the teeth being placed in correct occlusion, each tooth helps hold the other in position—just the opposite from the first case. And as the people become educated in this work and what to expect, and that while the change in looks is satisfactory, the change for the better physically and mentally is as great and greater.

On the other hand, if the application of the heading is taken this way, and diagnosed it would read,—The prevention of the science of straight teeth. The word Ortho, a prefix used in Greek words, meaning upright, straight, regular, etc., and dontia, tooth. Then "Preventative Orthodontia"—to prevent the science of straight teeth.

Now, again, if to prevent mal-occlusion, it is a misnomer, the irregular teeth are the results of the lack of space-room, and is a condition that takes place mostly before the tooth comes through or erupts. Now, how is one going to prevent that? And a good deal of it under the surface of the gums? Keep them from breathing through the mouth? Yes, and that is a physician's portion: To remove any obstruction in the nose, if adenoids, to remove them, or any mechanical obstruction, or to enlarge the nares to facilitate breathing; or if Dr. Blackmarr means to enlarge the arches as a preventative measure, in a possible chance, then I say "impractical," and as I take it, at least in my practice I want the first permanent molars and the eight anterior teeth erupted before the correction is begun.

Again, any simple individual tortion corrected would mean the wearing of the appliance, or a portion of it, during growth, and more added as occasion should arise,—again impractical. I like to get these cases as young as reasonable, but not before we are enabled to make a complete correction, and at that time we are enabled to give the patient better results and a shorter operation, which certainly is of significance to them. We can do this at a later age, from correction and not prevention, and at this early age there is time left for added development which will not take place if the case is corrected later, and this prevention means considerable and should be obtained. I believe in correction as early as it may be completed, and an earlier and broader education along these lines, and the expansion of the field by the complete correction, to the elimination of doubt as to necessity and to results.

In Dr. Blackmarr's paper, there were points brought out as well as in the discussion, that were of much interest to us all. But as I say, in the preparation of my notes, not having received a copy of his paper beforehand, I was enabled in my discussion, as stated, to draw my conclusions only from the title given in the program. The doctor made the broad statement in his paper, that he believed in prevention and not correction, if I am not mistaken, aside from other useful information. Now, to illustrate the point, I believe Dr. Runyan last night presented to you a case I had corrected and which was published in the April DENTAL SUMMARY, which will help to impress upon your mind the fact that these cases can and should be corrected and even at that age, but as I brought out, we cannot expect the definite results in development that would have been attained if the case had been corrected earlier, or if we had gotten the case to correct earlier*. And also in correcting these cases at that time, we can eliminate and prevent the exaggerated outcome of the cases formed by the added growth in the years of neglect, in not having the cases corrected earlier. We occasionally hear of, but seldom see, a case of lower protrusion as in the April SUMMARY and you saw this from the slides last night. We began the correction of this case at the age of seventeen, which in this case certainly is late enough. Here is a model in which the correction was commenced at the age of twenty-two, in which the lower jaw protrudes in front of the upper three quarters of an inch, and there are other cases, not corrected, quite as exaggerated as this. Surely, when such cases can be corrected it is proof enough that we need more satisfactory correction and apply the term prevention to earlier and broader education in the proper use and care of the teeth.

Dr. Runyan: As I understand Dr. Blackmarr's paper, it is this—that there are a great many things that can be done to prevent the conditions that Dr. Williams has shown, if they are taken in time, and it is our duty to call the parents' attention to these conditions and prevent their reaching that stage and condition which the doctor has shown here,—it is our duty as dentists to do it. There are things that we can do to prevent those conditions and we should be in a position to be in touch with our patients and protect them against any predisposition to the development of those abnormalities and prevent them, and if not able to prevent them, then to correct them. There are many things that we can do to prevent—if I use the term advisedly—what I call orthodontia. I am heartily in accord with what has been said and we are very glad that Dr. Williams has been able to produce the results that he has.

I used the pictures that were thrown on the screen because they emphasized the conditions that we wanted to prevent in educating the people that those conditions could be prevented, and also to show what could be done in the way of correcting them, as I explained to you last night.

Dr. J. M. Thompson: Preventative orthodontia will become an established fact just as soon as the profession in general become cognizant of its merits, and this must come sooner or later through educational channels which instill in the mind of the student the importance of normal occlusion. With a knowledge of the normal, the abnormal is easily detected and the patient recommended to an orthodontist.

Dr. J. L. Young, of New York, showed me some of his work in the mouths of his own children and the results are marvelous, and he was doing it long before the conditions the doctor speaks of were present, and it seems to me that he was doing preventative orthodontia.

Now a great many of us seem to be afraid of that word "prevention." Everybody expects when you begin the treatment of the teeth under the treatment of oral

*When any of you happen to be in Grand Rapids I should be glad to have you see this patient which is a great deal more satisfactory than looking at the model, then you can see the progress that has been made since October 14th.

prophylaxis to prevent decay, you are not going to have anything to do. I will tell you if any of you would get busy with prophylaxis you would have more to do than you ever had in your life. As far as preventive orthodontia is concerned, I don't believe we can get at that too early as long as we recognize the conditions and are assured in our own minds with the advice of the orthodontists that such care is needed. My own little girl is eight years old and she has at the present time one central incisor about half through. Her permanent molars are in position and her lower jaw is at present in need of expansion, and Dr. White is going to begin on her soon, and I think if we should have started last year we would have done so. He is working on his own little boy, and I think the sooner we recognize these conditions the sooner we will save a whole lot of trouble.

Dr. C. B. Blackmarr: (Closing the discussion). I am certainly very much gratified to think I have had so much discussion on my little paper as I have had. I knew about what Dr. Williams would say and the reason that I did not send him the paper before was so that he would not say any more than he did say. And another reason is, I notice the younger men like Dr. Williams and Dr. Cigrand write most of their papers after three o'clock in the morning and I thought he would have plenty of time this morning to write all that he needed to say.

Now, I have a stock farm and in the basement we have the vicious animals. There was a man went down the stairway one day to look at the stock and the animal did not like the looks of him and commenced to bellow. The man got up out of the stairway and said that he was not afraid, but he wanted to get out of there.

In regard to Dr. Williams—If he will just wait a little bit and you just look at these conditions when they first start in these little children and you become familiar with the looks of those abnormal conditions in tonsils, and so forth, you will soon begin to realize that there is a whole lot to this subject—and he will reap the benefit from the cases you refer to him.

I understand that the adenoid tissue of children should be recognized and removed early in the life of the child, and if the general profession would recognize these conditions quickly, a whole lot of narrow arch trouble will be eliminated, and a whole lot more, if you use the ordinary prevention. Dr. Wood answered that question so much nicer than I could. I hope you will just remember what he said. You all know Dr. Brown of Milwaukee, Wisconsin, who is operating today by spreading the arch of adults to relieve catarrhal trouble or irritation from deflected septum; he just spreads the arch so much that the suture is opened up and the septum of the nose will drop down to fill that space. Call it what you will,—preventative orthodontia or what,—how much easier it would be if you could only see those patients early and widen that arch and thus relieve that sort of condition, and the mal-occlusion of the teeth that so surely follows if the condition remained.

HOW TO REMOVE HARDENED MODELING COMPOUND FROM IMPRESSION TRAYS

By R. L. Hesser, Frankford, N. C.

Put a tablespoonful of concentrated lye into a small pan of water. Place impression trays in this solution for one hour; remove and rinse in clean water. The softened compound will now be easily removed with a soft cloth. This leaves the trays looking like new.

PROPAGANDISM OF DENTAL EDUCATION IN
OUR SCHOOLS*

By Fred H. Wittenbrook, D. D. S., Lima, Ohio

MY experience in the practice of dentistry is in its infancy, but I will try to show what the world is doing about this subject and will quote various statistics and statements of men prominent in our profession. There should certainly be no question in any of our minds of the necessity of spreading dental education in our public schools if one stops to study the various figures presented here. Why should not we, as a profession, push our education into the public schools the same as the medical profession is working up today? Here are a few statements from Medical records of March 20, '09. Inspection of German Schools was begun in Dresden in 1867. In 1898 it was made general throughout the empire so Wiesbaden School authorities soon realized that a complete physical examination of all the children entering the school was of the utmost importance. Twice a year the teacher records the weight and height of individual pupils, first established in United States at Boston, 1894. The Board of Health employed fifty physicians to inspect the public schools of Boston.

In 1895, same was established in Chicago. In 1897, Board of Health of New York City appointed one hundred and thirty-four medical inspectors for the public schools, with a chief at a salary of \$2,500.00 per annum. In 1898, Philadelphia adopted the same plan.

Four state legislatures have passed bills providing that all schools of the state must be inspected. New York Board of Health has also employed nurses at a salary of \$75.00 per month each. Statistics show that saves the school more than the cost of her salary. She visits and instructs the families of pupils who are sent home from school because of sickness. She sees where it is, the lack of care at home or school, which brings on the sickness.

Now turning to the dental side of the subject I intend to show what the world is doing about this subject.

In an address to the students of the Royal Dental Hospital of London, Dr. Osler said: "You have just one gospel to preach, and that is the gospel of cleanliness of the mouth, the cleanliness of the teeth and the cleanliness of the throat. These three things must be your text throughout life. Oral hygiene—the hygiene of the mouth—there is not any one single thing more important to the public in the whole region of hygiene than that, and it is with that that you, as practitioners, will have to deal."

Also Dr. Brown of Chicago says: "If the mouths of the children in our public schools could be systematically examined by competent persons and instruction given and enforced with regard to the intelligent use of brushes and antiseptic solutions, the death-rate of this country would be materially lessened and the percentage of illness much reduced, and a

*Read before the Allen County Dental Society, April 27, 1909.

stronger and a more vigorous race result in consequence of these prophylactic measures." Where do these men get such ideas?

It was found on examination that nearly 80 per cent of the children in Great Britain's Industrial schools were suffering from decayed teeth. Dr. George W. Cook reports, after investigation of 220 mouths, that 171 contained the bacillus tuberculosis, thereby showing conclusively that even that dreaded plague may enter the system by way of carious dental organs. And, by the way, are not the avenues of infection of most specific diseases by the way of the alimentary canal and especially so where unhygienic, putrefactive conditions of the mouth exist?

In the third annual report of the city of Strasburg, of 2,269 children examined between the ages of 3 and 4, only 362 had good teeth—less than 16 per cent. Of 2,103 between the ages of 6 and 8, only 160 or 7½ per cent; and the report goes on to state that this third annual report shows a remarkable improvement in general health of the public school children: less headache, earache and stomach trouble. I wonder what must have been the condition there prior to the introduction of compulsory education in the care of the teeth! A further report from same source states that in one school of 700 pupils, 500 between ten and eighteen years of age, 50 cleaned their teeth, 275 used a brush sometimes, 175 did not even own one, and of 200 in the primary departments, between the ages of six and ten, only ten had a brush. It was this alarming condition of decay that caused an erection of a dental hospital there for the exclusive use of school children, and every child is subjected to a dental examination on entering school and twice per year thereafter until the age of thirteen. In Germany, of 20,000 children between the ages of six and sixteen, 95 per cent had dental caries in alarming proportion. In Freiburg there is established a municipal school dental clinic, the faculty of which examines the teeth of all the children, whether school children or not. Each child is furnished with a card bearing the history of the condition of his teeth on the date of examination, and on the back of the card are printed instructions for the care of the teeth. The parents of children found to have defective teeth are notified and at the same time are requested to send their children to the dental clinic for treatment at the expense of the city. In England, 75 per cent of all the children are sufferers from unhygienic condition of mouths. In Frankfort, of 1020 children (482 boys and 538 girls) examined, there were found 28,673 defective teeth. Boys had 12,826 and only 2,116 sound, and 15,747 of girls' teeth were defective, with only 931 sound ones; 293 girls, or half of the total number, were suffering in general health in consequence of decayed teeth. These figures go to show that 90 per cent of all the teeth examined were defective.

In Paris, both medical and sanitary inspection is obligatory in all schools, and, by virtue of the municipality, the pupils have their teeth examined every six months. In Stockholm, in obedience to the King's command, there is systematic examination of mouths of all school children since

1899. While I am far from being an advocate of monarchical powers, I think this is a good thing in this particular instance and it is most deplorable that our president has not the same authority. The examination of 3,156 school children in New South Wales, in all of 73,708 teeth, showed 16 per cent of the permanent and 24.47 per cent of the temporary teeth in carious condition. In all, 94 per cent of these children had decayed teeth. In the British army, during one year 4,740 men had 7,604 teeth drawn—just think of the sacrifice! Out of 23,000 men refused enlistment from all causes in one year, 5,000 men were rejected for either the loss of or on account of decayed teeth. In reply to my question, I have the report of the surgeon general of the United States Army, that in the fiscal year 1905 to 1906, 18,000 young men were rejected for all causes, and 1,000 were refused enlistment on account of bad teeth alone!

An English writer recently pointed out very strikingly the importance of oral hygiene and his words may be quoted here to advantage: "I am convinced that a septic condition of the mouth tolerated in ordinary health becomes a source of great danger to the patient during an acute attack of specific illness, such as typhoid fever, ulcerative endocarditis or pneumonia, and may be an important issue in the case." Another distinguished specialist asserts (says Dr. W. D. Miller) that loss of appetite, nausea and general ill health, may be brought about by want of proper attention to the mouth, causing a chronic state of putrefaction, the products of which are absorbed by the mucous membrane with serious results to the general health. The examination of 987 children developed that 99 per cent of all those suffering from the caries of the teeth were affected with putrefactive condition and swelling of lower glands, of which no physician would be able to make a diagnosis."

Again, Dr. Brown, in his address before the American Medical Association, said in part: "The presence of bacteria in such a great variety and number in the mouth at all times, must be looked upon as a menace not only to the teeth in their relation to the dental caries, but through their action as well upon the mucous membrane, rendering it more susceptible to the germs of specific fevers, and upon the digestive tract, for many complaints of the stomach and intestines have been found to be caused by mouth bacteria and their products. Even the lungs are subject to this influence from the mouth. Therefore, its thorough disinfection becomes a matter of first importance." Dr. Burton Lee Thorpe says that the mouth is the breeding place of the bacillus influenza, and that oral sepsis is the predisposing cause of influenza and that those with hygienic mouths are practically immune from it.

From the above conclusions it will readily be seen that our progressive minds are uniform in the belief that no person's health can be better than his teeth. It has been well demonstrated that the education of a country must begin, first, in its schools; and, true to this, we find men are awakening to the fact, are establishing educational institutions, and are lecturing, with

a great sacrifice to themselves, in public schools and are opening the long-shut eyes of the laity to the urgent need of a clean, healthy vestibule to the human system. And so it is that we read that since the experiment of the City of Strasburg, there are more than a dozen cities in Germany that have established like dental clinics for compulsory examination and care of the school children's teeth. The British army council, in view of the enormous loss of teeth in its ranks, commenced supplying the soldiers with artificial dentures, and were obliged to discontinue this experiment owing only to the fact that the soldiers so treated would not live up to their agreement to pay for such services out of their monthly allowance of 25 cents, and when the military authorities made demands for payment, Tommy Atkins decamped, teeth and all. Russia, that supposedly uncivilized and backward country, is beating us in the very line in which we know we ought to be the stronger. Even there they have established dental clinics in various cities for the care of school children's mouths, and in St. Petersburg alone, a city of just a trifle over a million inhabitants, a city the size of Philadelphia, there are nine such dental dispensaries. New York Association for the Improvement of Condition of the Poor, realizing after examination of school children under their jurisdiction that there were 18,000 of them needing dental attention, have established a dental infirmary at the annual expense of \$3,000 where these children are taken care of, and not by students, but by first class dental practitioners. In Cleveland there is established a dental clinic in the city infirmary for the exclusive care of 1,500 children of the poor. In Malden, Mass., in spite of the failure of passage of the bill for compulsory examination and care of the teeth of the school children, there is started a strong movement in this direction and the examination and care of the children is an assured fact.

We read that a movement is on foot in Chicago to establish a \$300,000 school, the express mission of which will be the salvation of the human stomach. "A most excellent move," said one of our professional savants, "for no man can feel better than his stomach;" but the greatest factor in abusing this vastly important organ is the utter neglect of keeping the teeth in proper condition, and the success of this institution will depend largely upon the stress placed on oral hygiene and the preservation of the individual's teeth. We read further, that, in the Chicago Hospital, a special clinic department is to be added, in which a regularly established system of mother's clinics for the free instruction of parents in the care of children will be held. It is hoped that mothers will be given, along with the rest, thorough instruction relative to the children's teeth, and then no mother can say she did not know this or that about her child's dentition. The enthusiastic and scholarly Dr. Raylor of Cambridge has offered to defray the cost up to \$2,500 for a year's attention to the teeth of children attending the schools of his town. A very commendable offer, and I wish there were more such benefactors.

Now, we come to the question, "Does the medical profession, and the constituents of the various boards of health, do their duty by themselves and by the public if they do not insist upon systematic care of children's teeth?" Most emphatically, No! Take our own Board of Health, for instance; this board publishes "for the general dissemination of sanitary knowledge," quarterly pamphlets dealing with prevention of certain specific, epidemic diseases. One pamphlet is on diphtheria and its restriction and prevention; one on tuberculosis; one on typhoid fever and its restriction and prevention, etc.; and one just of recent issue deals totally with sanitary teaching in our public schools. A most commendable work, indeed, but let us stop a minute:—out of 60 printed pages we find but a few lines that at all mention the care of the teeth, while we find a whole paragraph on the care of eyes and ears!

Is it not a proven fact that most earaches are in reality toothaches? I give full credit to Professor Ferris, who though not a medical man, recognizes the necessity of cleansing the teeth, and in his article in the aforementioned pamphlet urges regular visits to the dentist. I say it is within the jurisdiction of the Boards of Health to insist on dental care and dental education in our schools, and then and only then can we expect the fathers and the mothers to come to know whether their child has his second tooth. In most of our schools physiology and hygiene are taught, to some extent, and we will all agree that the dental hygiene should find its way into the school curriculum as well. Just imagine, gentlemen, of the immense progress we would make if the 18,000,000 children of our schools today should receive the benefit of such instruction.

Only recently, in Ann Arbor, a Miss Ellis of Grand Rapids was highly praised for the eloquent appeal before the Michigan School-masters' Club for a better parental and scholastic training of the young in the rules of health and hygiene. This lady declared that personal hygiene was sadly neglected and attributed much of disease and the accompanying evils to the ignorance of its laws. She insisted on practical teaching of all matters pertaining to the elevating of the bodily health, and went even so far as to recommend elementary lectures in bacteriology with particular study of tuberculosis and its prevention and cure. I am sorry that one thing was left out of her lecture—the unclean, diseased condition of the mouths. Only a few weeks since, at the Tuberculosis Convention at Washington, the celebrated Dr. Dunn of Boston stated that the terrible white plague increases from month to month and year to year, and that, in early life, tuberculosis does not affect the lungs as it does in the case of adults, but frequently remains hidden in the internal glands in children, until an acute form of tubercular meningitis or pneumonia causes death. "Children" he declared, "have no power of resistance against acute outbreaks," and he said also, that this disease entered the body through the lungs, through the intestines or through the tonsils and larynx and located itself in the glands. As the mouth is the very entrance to all these passages, is it not important to teach

oral hygiene, thereby guarding the gates of admission and lessen the tendency or susceptibility and reduce the predisposing cause of infection?

The problem of educating the school children in the necessity of oral hygiene and the care of the teeth is a hard one, to be sure. I do not stand alone in my opinion that our medium is through the school children between the ages of 6 and 16. I have found out that practitioners in Missouri, Mississippi and Massachusetts, have attempted to pass laws making it compulsory to teach these subjects in the schools, but these attempts, perhaps from the lack of enthusiasm, insufficient support or indifferent perseverance, or perhaps from the lack of all three, have proved unsuccessful.

Here is a statement of Dr. Zederbaum of Eaton County, Mich. "I examined in all five hundred mouths of school children between the ages of six and sixteen and found hundreds in need of dental attention. All of the various dental branches, with the exception perhaps of the prosthetic branch as applied to plate making, were found to be called for. Here were numerous cases for treatments for filling and many for the extraction specialist; and my! what a field for the Orthodontist. In aggregate there were 2,700 teeth that needed attention, thus bringing the average of six teeth to each mouth." The Board of Education hearing of Dr. Zederbaum's progress sent a committee to see him asking him to deliver a lecture before the State Teachers' Institute. Accordingly, he appeared on their program and quoting from a clipping merely to show that the sentiment is with us, and the people and the press are willing to assist us, Dr. Zederbaum gave a half hour lecture before the teachers' institute. His topic was Oral Hygiene and Prophylaxis, and his arguments were in favor of a thorough teaching of youngsters as to the care of teeth that were sound, and the cleaning of their mouths.

After hearing Dr. Zederbaum's lecture before this Institute he was employed to lecture before the schools at least once each term and also examine the children's mouths. I also find there are a great number of the teachers' mouths in as bad a condition as any of the pupils. In his lecture he made every statement as plain as he could; how to use the tooth brush, what was the cause of so called "gum boil," how to prevent them, etc. He says that on an average each child will have six defective teeth. That average holding good, we having here in the Lima schools about 4,800 pupils, there would be 28,800 defective teeth, not saying anything about the diseased gums in great numbers, and the orthodontia cases there would be.

Now, gentlemen, I trust I have proven to you the necessity of propaganda of dental education in our public schools.

Now, that our eyes are opened to the situation, let us not ponder over it, but take this matter up as a body and act in harmony and in unison to accomplish the greatest benefit for humanity that has ever been attempted.

Watching the human plant unfold and develop in favorable environment, and careful study of the means of improving and enlarging that

environment until the plant shall more and more nearly approach the perfection which the Great Author of our being intended us all to reach, is the great privilege of the teacher of children. The teacher's calling is the noblest in the world. Shall we not as parents and good citizens do our part to render the work effective and satisfactory?

BUSINESS SIDE OF DENTISTRY *

By E. R. Kibler, D. D. S., Indianapolis, Ind.

SOMETIME since I was reading a booklet entitled "The Law of Financial Success," by Mr. E. E. Beals, in which he says "everything in nature operates in accordance with law." "All processes, whether physical or mental, are based upon law, as is also the law of financial success." We may consciously or unconsciously discover this law of financial success and apply it to our profession. We will discuss two phases of this law and will call them salesmanship and collection.

SALESMANSHIP.

You may say we are professional men and not salesmen, thinking only of merchandise, but don't we sell our time, our skill, our knowledge and our ability? And are not our personality and our reputation assets in our ability as salesmen? Suppose one of your neighbors asked \$5.00 for a certain operation and you asked and got \$8.00 for a similar operation; if workmanship, quality of material used, and all other things are equal, are not you the better salesman?

There are several factors that enter into one's success in a profession. Confidence in one's self is an important one. By this, I mean the absence of fear and worry that one will not succeed and the presence of an ambition to rise.

Let us look at the salesman for a few moments. Suppose we want to buy something. The first thing we do is to decide where we will buy. We will seek an establishment that is up-to-date, where we can get the best assortment of what we want. We won't seek a dingy store where the stock is old and out of date. People nowadays want prompt service and courteous treatment. We will go to the store that is well lighted, ventilated and clean. To us this means our offices.

Here are a few things we can learn from the salesman, quoting from the *Digest*.

"First—The salesman's motives. Most good salesmen get a commission. This is greater from a greater volume of business, therefore, he is planning to make you purchase as much as seems wise. You will not *see* his intentions, but they are there and they govern his course.

Second—He is anxious to serve you. A really good salesman places at

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your disposal all his knowledge of goods. In a reputable store, he will help you wisely in the selection. He will also lead you away from the cheap and transient articles toward articles of quality.

Third—He wants you to get the best. He will say as little as possible about prices and what little he says will be in such a way as to make prices secondary importance. His talk dwells on what you are to get, never on what you are to give.

Fourth—He occupies himself with creating wants in your mind. He leads you through four well defined mental steps—attention, desire, conviction and action. He draws you a mental picture of what you want and the pleasure you will enjoy in buying the best article.”

Let us look at the dentist for a moment. A patient presents with an edentulous jaw to dentist No. 1. This dentist is a good workman, but not a good salesman. He did not take the pains to explain to the patient the possibilities of his art, the different methods by which he could meet the patient’s needs. In other words, he didn’t create any desires.

He offers to make two vulcanite dentures at a fair fee. The patient was not satisfied and left the dentist’s office.

He goes to dentist No. 2 who, perhaps, is no better workman, but is a better salesman. This dentist sees the possibilities in the case. He offers first the vulcanite denture as a starting point. Then he describes the comfort and cleanliness and the beneficial results of gold bases at many times the cost of vulcanite. The patient accepted this and was satisfied. Why? Simply because dentist No. 2 took the time and the pains to paint the picture in the patient’s mind that only those gold bases could satisfy.

If you will pardon a personal reference, I would like to cite a case that came under my care. A lady about fifty years of age presented for some work. I examined her mouth and found upper and lower left bicuspids and first molars missing. While doing some operative work for the patient, I casually remarked, “I cannot understand how you masticate your food properly.”

At the next sitting she said, “Since you have suggested that I cannot masticate properly, I have noticed that it is true.” Then she asked if there was not something that could be done to replace the lost teeth. I then explained to her what could be done and made such an impression that she could easily see the benefits to be derived by properly masticating her food. As a result, I received a nice fee for constructing two bridges. She had visited dentists for a great many years and it never had been suggested to her that she could not masticate properly.

We must put our whole soul into everything we do and cultivate the habit of enthusing our patients. We should all do more to educate our patients. This is one way to protect the public from the quack. There are a great many people who will not tolerate cheap and indifferent workmanship, because they have been educated by paintaking dentists.

Dr. G. W. Clapp says in an editorial in the *Digest*, “The action of

societies will be slow. Many a patient who needs information now will be cold in death before their propaganda will reach him, but definite, positive, beneficial action is possible to each practicing dentist today. Let him resolve to be a beacon light of dental knowledge in his own community. Let him see that every patient who comes into his office receives an explanation of the causes which make necessary the operation to be performed at the time, with the instructions how to avoid such necessity in the future. Let him preach daily the doctrine of 'clean teeth will not decay.' "

Remember, our stock in trade is our time. It, therefore, behooves us to get as large a return for this time as we can. We should try to get away from a set price and train our patients to expect a fee based on time. Some of you may think that it cannot be done, but this can be done and those who are doing it are getting better fees, thereby increasing their income and keeping their practice under control.

To illustrate why a fee based on time is practical, let us cite two cases. Mr. Jones presents with pulpitis in a molar, and after devitalizing the pulp and opening into the pulp chamber, it is found that the canals are constricted. Sulphuric acid is sealed into the tooth and he is given another sitting. When the canals are enlarged and filled to the best of our ability, we count up the time and find that three hours were consumed in doing the work. We will all agree, I think, that we should receive a fee for three hours' time and I am sure Mr. Jones would rather pay us for this amount of time and have the operation successful than to pay for one hour's time and have an abscess form in a few years. If we could perform the operation in half the time, we should give the patient the benefit of it, and charge accordingly.

Another case, Mrs. Smith, who is very nervous, presents with a sensitive cavity to be filled. If the dentist is conscientious he will not fill the tooth until the cavity is properly prepared. If he takes time to get the patient's confidence, and uses something to obtund the sensitive dentin, it will require about two hours to prepare and fill the cavity properly. Which is the best for the patient and for one's reputation—to fill the tooth with decay remaining in the cavity and charge a small fee, or perform the operation to the best of one's ability, and charge for the actual time consumed?

The fact that we see so much bad dentistry is because we have not trained our patients to pay for time we give them, and the result is we try to see too many patients. They can be educated to pay for the time consumed as readily as to pay for a piece of work. How can we expect our patients to appreciate fully the value of skillful operations if we continually undervalue our services?

After we have practiced a few years and our working hours, say from 9 to 5, are practically filled, and our practice is continually increasing, what do we do? I am sorry to say most of us increase our number of working hours. We begin at 8 and work until 6. Keep up this gait for a few years and until our practice increases, then what happens?

To crowd in a few more patients we begin to slight our work, and by that time we are a physical wreck. And our patients begin to complain. We are in such a hurry that we can't take the time to do our work properly, and as a result our patients seek some one who has time to wait on them. I believe we will find more dentists with too many patients, rather than the reversed condition.

Suppose a dentist keeps well informed and in touch with the progress of his profession, is conscientiously working, and each year of his experience gives added value to his skill. Are not his services worth more? Wouldn't it be better to increase your fees per hour and keep your practice under control? We will lose a few patients this way at the start, but this is what we want.

Don't be nervous or irritable when patients ask questions regarding fees, for it is but natural that anyone should ask questions before making investments. Try to explain that which is most needed. We are prone to feel that when patients come to us, they should have the work done and we expect them to ask no questions. This is neither fair to us nor to our patients, for they should have a clear understanding of that which is best for them.

It is far better that we have a definite understanding with some patients about the expense of the work before it is done. Many times we can charge more for our services if the patient knows in advance what the fee will be.

Much might be said along the line of cleanliness of office, sterilization of instruments, and proper equipment which will help considerably. No matter how clever a dentist may be or how pleasing his personality, no matter if he be magnetic to a degree to attract people to his office, or if his work be of superior quality, if he cannot attend to the business part of his profession, he is not a complete success. I mean by this, his ability to collect larger fees as his reputation and experience increases.

This leads me to the second part of the paper:

COLLECTIONS.

In the majority of cases, when a patient comes to you, he comes prepared to pay when the work is completed. Any business man, when selling goods, has a distinct understanding regarding the payment for the merchandise. *Why not apply this rule to our profession?*

A dentist is in a peculiar position, regarding his work. When people become ill, they go to a physician, get a prescription, pay a fee, take the medicine, and then if they get sick again, they go to the physician and repeat the performance.

With dentists, it is different. We insert the work and the patient expects it to last for years, and in the majority of failures, whether it is our fault or not, he expects us to replace it, free.

Patients should have value received for the money they pay us, but

they should not be made to believe that dental operations are permanent.

Statements should be sent the first of the month after the work is completed and the first of the month for each succeeding month until the bill is paid.

In a recent conversation with a friend, he informed me that he had at least \$1,200 on his books and that it was all good. When asked how long these accounts had been running, he informed me that some were one year old, some two years, and some three years old. I predicted that he could collect only between 50 to 60 per cent of the accounts a year old—about 25 to 40 per cent of those two years old, and that he would be fortunate if he collected 10 per cent of the accounts three years old. We would show better business judgment if these long standing accounts were placed in the hands of competent collectors.

Human nature is so constituted that often the man who does not do right by another, hates the man he has wronged; so in not paying his bill the patient comes to hate the dentist, cries down his work and does him an injury. Work paid for has a better chance of giving satisfaction.

When we insist that a patient pay promptly, we may cause a little antagonism, but we gain the patient's respect and seldom lose his friendship. A dentist should not be afraid to ask for that which is due him. He should remember that he is only asking for his money. He should never say, "Oh! that's all right; pay me when you can." When a man says he can't pay, it would be better to say, "I am sorry you cannot help me out as I was relying on this money," then ask him when he can pay. Get some positive assurance that he will pay at a certain time; if he fails to meet his obligations, write him a note, reminding him of his promise.

It reacts upon us when we give long time credit, because people will begin to expect it of us even though they are prepared to pay at the time the work is completed. We should not allow ourselves to get the reputation of being easy, or permit our friends to send their friends to us with the understanding that "the doctor will wait a long time on you for the money."

A dentist who is a prompt collector and impresses his patients that their accounts, which constitute his business are watched, will command more respect than the careless dentist. The ability to collect does not mean the power to extract money from refractory debtors, rather it means the ability to impress and train the debtor in such a manner that he will unconsciously get the habit of paying promptly.

We, as young professional men, are prone to forget that the day is coming when we cannot easily spend many hours at the chair. Humanity is fickle and when a professional man begins to lose his prestige as he advances in years, the patients, being quick to perceive this, will take up with younger men unless we are able to compete with them.

PRESIDENT'S ADDRESS*

By A. C. Reinhardt, D. D. S., Pittsburg, Pa.

THE ODONTOLOGICAL SOCIETY—ITS PAST, PRESENT AND FUTURE.

ONCE again the relentless march of that insidious and hoary-headed individual, Father Time, of whom it is written, "waits for no man," brings to us the realization that another year of our existence has passed o'er, and that we stand at the threshold of the twenty-ninth of our endeavor as a society of scientific research and educational progression. It is, perhaps, for us in this modern twentieth century time, hard to realize with what momentous portent the past twenty-eight years have been fraught, in the development and evolution of dental practice to its amazing achievements of the present day. It is, therefore, peculiarly interesting and most fitting, in my mind, to take a retrospective view of the important position occupied by the Odontological Society and its members, past and present, in this most interesting and instructive quarter of a century of the life and development of the profession of dentistry.

The earliest authentic record of the organization of this body gives the year 1881 as the time of its origin, and the only program in existence of that year gives the date of that meeting as December 13th, 1881, although the actual time and date of organization is stated to have been during the month of June of that year. Regarding the causes of or where the actual formation of the society took place, is buried in the dim vistas of the past, and we have noted in a reprint of 1903 of that much maligned constitution which was only recently accused of never having an existence, the fact that the society was organized in the summer of 1881, and a list of the officers and members is given as follows:

President, Dr. J. S. King; Vice President, H. W. Arthur; Recording Secretary, G. L. Simpson; Treasurer, L. DePuy; Corresponding Secretary, H. DePuy; Censors, M. B. Lowry, I. P. Thompson, F. Herrick; Executive Committee, J. G. Templeton, J. W. Green, Geo. G. Crow; Delegates to State Society, Gale French, H. W. Arthur, M. D. Gailbraith, M. B. Lowry; Members, J. G. Templeton, J. S. King, Hiram DePuy, M. B. Lowry, W. E. Van Orsdel, David P. Stewart, W. B. Libbey, G. L. Simpson, Gale French, M. D. Gailbraith, Geo. G. Crow, F. Herrick, J. P. Thompson, J. E. Libbey, Geo. Green, M. S. Burns, L. DePuy, J. F. Shannon, Courtlen King, H. W. Arthur, J. A. Libbey and G. H. Morgan.

It is a great pleasure to note that the now venerable President of that time, Dr. James S. King, is still living in the state of California. It is a source of regret to the officers, and will be, no doubt, to the members, that it was impossible to have the "grand old man" of those times present here today, to accept the felicitations of our society for the many years of painstaking endeavor and unselfish labor in its behalf, and to witness the

*Read before the Odontological Society of Western Pennsylvania, March, 1909.

triumphal progress as evidenced in the magnificent program presented for your delectation and enjoyment—things made possible today by the sterling character of him and that band of devoted men who were instrumental in the foundation and upbuilding of the organization which we have and enjoy at the present time. It is a source of great comfort and congratulation to the society, in viewing the list of these "Fathers of the Odontological," that the majority of them are still living with us, hale, hearty, and still actively able to enjoy the fruits of their work in creating the Institution, which, verily, "they builded better than they knew." In passing over this history of the years that have gone, bringing us to this time of joyful celebration of battles won and of wonderful achievement, we must yet, after all, give vent to that feeling of inevitable sorrow, in the loss of those devoted co-laborers, whose earthly career has been closed by the unfaltering hand of Death. It remains only for us to say that the history of their endeavors for the benefit of our Society shall live and be reverently emblazoned on those Tablets of Love and Memory which shall hold an unperishable place in our hearts—above the Silent Bivouac of "Our Honored Dead." It is verily true that this world's a stage and we all are merely players, who have our entrances and our exits; how in the course of our lives, in the various fields of human activity, we may help each other; how dependent we are upon one another in the attempted accomplishment of our life's ambition. And it is here that we may well pause to reflect how our every thought, act and deed may possibly influence the formation of, not only our own character, but that of our associates, and the bearing these combined elements may have upon the development and achievements of the particular profession with which we may become affiliated. Of the possible results of such endeavor on the part of the earnest and sincere founders of this association, our Odontological Society, with its two hundred and odd membership at this date, is a shining example. In looking through a very interesting collection of programs, covering the period between December 13th, 1881, and March 9th, 1909, we come upon many interesting things, historical, in the life of our Society. It would, perhaps, be pertinent to note here what a brilliant failure of the old time superstition of the "13 Legend" comes to light. Evidently the earliest association of our Society with the number 13 has not proven the proverbial hoodoo which is ascribed to it, considering the lusty growth and healthful vigor our Society exhibits today, after innumerable meetings scheduled on "the thirteenth day." The earliest session of the Society of which we have record and a program, was held at the office of Dr. Gale French, then located at No. 149 Penn Ave. This meeting occurred on December 13th, 1881, beginning at 6 p. m. The program bears the name of our still present member, Dr. Hiram DePuy as secretary, and essays were presented by Dr. M. B. Lowry, of Brookville, Pa., entitled, "Tumors of the Mouth, Diagnosis and Treatment;" and by our still living and ever irrepressible friend, Dr. Guy Morgan, who then held forth at Bridgewater, Pa., whose subject was, "The

Physiology of Nutrition," both being subjects of great interest then, and perhaps even of greater interest today, in the light of modern research. And it might be pertinent to digress here for a moment to call attention to those members when asked for contributions to programs who invariably exclaim, "there is nothing new under the sun." That interesting, and to us somewhat necessary orb, is as "old as the hills" we all know, but if these recalcitrant members will lend their ears to the recital of subjects mentioned long years ago, they will be compelled to admit that these, though old, may yet be clad in "verdure new and green" when judged by the accomplishments of a Garretson, a Peirce, a Kirk, or of that indestructible fountain of knowledge which sprang from that "Prince of Investigators," Willoughby D. Miller. It would be interesting, indeed, to read an accurate record of the essays given and compare the knowledge of those times, more or less empiric, with the proven scientific principles evolved by modern Microscopy, Bacteriology and Physiologic research. We can but pause in wonder and amazement when we think of what has been accomplished, and what even yet remains to be done. The next programs are of the year 1882. The June meeting of that year was held at Washington, Pa., in the office of Dr. W. B. Libbey, whom the older members will probably remember. I have a recollection of seeing this Dr. Libbey in the later years of his life, from seeing him on the streets of Lawrenceville when I was a boy, during his periodical visits to his brother, who practiced there years before my advent into the ranks of the profession. My memory of this Dr. Libbey is that he was rather a handsome man. Of course this is not to be taken as a reflection upon that valiant war horse, Dr. J. A., who still prances in our midst, particularly when someone tramples upon any of his pet theories or hobbies. In this program are also mentioned many old and familiar friends, as G. W. Green, of New Castle; J. G. Templeton, French, G. L. Simpson and others. The subjects presented were another instalment of Morgan's famous paper on Nutrition. It is said he had been goaded by the committee, and for revenge never gave them any peace afterward. Also such subjects as Pyorrhœa, which is still with us, in all its pristine vigor, and Richmond Crowns—filling by hand pressure, crowning by the Litch method. These will, no doubt, be familiar to the old timers. Other meetings of the year 1882 were held at Johnstown, Pa., on September 12th, at the office of J. P. Thompson, and in December at the office of Dr. J. S. King, then located at the corner of Third Ave. and Smithfield street. At these meetings essays on "Irregularities and Treatment," and "Treatment of the Six Year Molars" were presented by Drs. Simpson and King; and by Drs. Burns and Templeton, papers on "Appliances for Finishing Fillings," and "The Effects of Febrile and Zymotic Diseases on the Teeth." These subjects will perhaps sound a trifle strange to our ears in the light of modern procedure, and it is rather interesting to conjecture what appliances they had for use in those days and how they would compare with the host of things to be found today in the armamentarium of

the up-to-date dental surgeon. Also would it be most interesting to know what the "Model of an Improved Method of Securing Atmospheric Pressure for Artificial Dentures" would be. This could perhaps be explained by Dr. J. A. Libbey, who presented it. Most likely it was discovered while he practiced in the wilderness that East Liverpool, Ohio, must have been in those early pioneer days.

In 1883 four meetings were held. In Pittsburg, in Greenville, Pa., at the office of one of the deceased organizers of the society, Dr. F. Herriek, and in Brookville, Pa., at the office of Dr. M. B. Lowry. A range of subjects was presented which would perhaps sound strange to us today. For instance, "The Nervous Forces as Applied to Nutrition," by our late lamented secretary of many years, W. E. Van Orsdel, who died a short time ago in Philadelphia. Poor Van Orsdel! a brilliant orator, a man of great mental capacity, his was rather an eventful career. Let us most reverently say for him "Resquiescat en Pace." It was in the September of this year that the never-forgotten essay on the "Effects of Tobacco on the Teeth" was begun by Dr. J. S. Hertig, father of our present member, Dr. Owen L. Hertig. It is said by older members that Dr. Hertig was acknowledged to be one of the ablest and most thorough investigators of his time, and besides his great talents as a practitioner, possessed the rare faculty of presenting the result of his labors in the most concise and lucid manner, enabling all who had the pleasure of hearing him to grasp the thought he wished to convey with ease. At these meetings another subject viz., "The Use of the Engine and the Excavator" was presented. Judging from what our improved machinery of today presents in those lines, we have reason to congratulate ourselves in having such able assistants in prosecuting our labors and which enable us to do our work so much quicker and a great deal less painfully than could have been done with those instruments of long ago. It will be seen by the character of the essays and demonstrations given by the programs of the days of 1881 to 1890, very little was then known of the modern appliances which later came upon the scene. The methods and materials used then seem rather primitive to us, indeed. The matrix filling is first mentioned in a program of 1885. Little, if anything, of crowns, and nothing at all of the cap crown, so much used at the present time. In the programs of the meetings from the years 1884 to 1890 the general trend of the papers presented was more along the line of Physiological research, as is evidenced by such titles as "The Process of Absorption in Dental Tissues," by Dr. W. H. Whitslar, who is also a contributor to the program of this meeting. And, "The Effects of Gestation and Lactation on the Teeth," by Dr. J. P. Thompson. Another, a "Demonstration of Shaping and Tempering Steel Instruments," given by Dr. J. S. King, is possibly something that very few of the present generation of dentists have seen, or perhaps can do, themselves. In going over the wide range of the demonstrations of the past it seems queer not to see the subject of crowns and bridges mentioned, these

contrivances to the period from '89 to '90, to the present day. What wonders in the evolution of dental practice have been accomplished in this space of twenty-eight years, and as we view it now we wonder how the practitioner of early years got along and accomplished anything at all with the limited means at his command. But those were the days of "Man and the Ingenuity of Brains and Fingers;" while today it is more or less something like "Man and his Machine," the latter more often constructed by one who never inserted a filling, and perhaps wouldn't know a pulp canal from a rain spout. In the earlier days filling materials were limited to a possible choice of two or three, and what wonderful results can be seen from the indefatigable labors of old time practitioners with gold and the much despised amalgam, which were practically all they had in the line of permanent filling materials. The writer has seen just recently fillings of gold inserted many years ago, still doing excellent service. And were you to ask me if the modern inlay of either gold or porcelain scientifically applied and exquisitely mortised to place by a mechanic of high degree would last that long, I would be fain to reply, "Ask the man in the moon;" and perhaps you would question my motive in citing you such an illustration. It is only to bring you to a realization of the complete revolution in the character of the work we do today and what was done only a few short years ago. It cannot help but impress upon you the great necessity of careful investigation and trying out of the multitude of new methods being constantly introduced. It is here that the purpose and mission of the dental society is clearly brought to view, and the need of its existence emphasized. It is here that the experiments of a large body of men can be given, such experiences necessarily covering so large a latitude that it will, in a very short time, bring to light the possibilities and results of certain methods of practice. It is therefore the duty of every member of the Odontological Society to faithfully attend its meetings, and not only partake of the practical knowledge to be gained by association and exchange of ideas with his fellows, but to bring to its clinics and demonstrations the methods which he may have found valuable, to proclaim results which he may have observed and experienced. In this manner, can answer the question of what the future of the society shall be with assurance. In making it the place for obtaining that education, which, after all, is the most important and far reaching—the one which we give ourselves, we not only benefit each other, but with the valuable aid thus gained, our ability to alleviate the sufferings of humanity is largely increased.

In reviewing the vast accomplishments of the past twenty-eight years one can scarcely refrain from marveling at the remarkable change in methods, materials and appliances. How the pendulum of time has brought us from the laboriously inserted contour gold filling to the inlay, with its ease and comfort for both operator and patient. But alas! even now we are not as yet entirely aware of the ultimate destiny of this work—time alone can tell us. And so it is with every innovation. The ideal filling material

still remains to be discovered. There is still room for the effervescent spirit of American experiment and research, and while we dwell on the matter of advancement, let us not forget to advise our budding geniuses that the field of Prosthetic Dentistry is a wide and inviting one, and much might be accomplished by giving it some needed attention.

Of all the later development of modern ideas, the ones that perhaps should receive our most earnest and persistent effort, are those fields opened by the installation of Oral Prophylaxis and Orthodontia. In prosecuting the work zealously along these lines, we can, without doubt, take the most decided steps in bringing about and forming a bulwark against the fearful devastation of dental caries, and insure the coming generation some relief from the evils effected by this insidious malady. Let us be stimulated by the example set us by the organizers of this association. While it has been said that the thorough and conscientious performance of duty by those selected to fill positions requiring great labor and sacrifice of time, needs no praise, yet it is my desire, in concluding, to extend my heartiest thanks to those who have so unselfishly labored in the past two years in behalf of this association, and express to all my profound obligation for the unstinted effort which has produced and made possible the admirable program for this twenty-eighth anniversary of the Odontological Society of Pennsylvania. I further desire to acknowledge the courtesies of Dr. M. S. Burns, through whose kindly offices the data regarding the ancient history herein contained was obtained for this meeting.

THE ABSORBENT ORGANS*

By E. H. Coller, D. D. S., Battle Creek, Mich.

THAT there must be some active agency at work at the commencement and during the time of the absorption of the roots of the temporary teeth, there can be no doubt; and as that is the case, it is most reasonable to believe that the agency for that purpose is supplied by some sort of a secretory organ.

It is said that when there is a temporary function to be performed in the animal economy, there is always a temporary organ supplied for that purpose.

Careful dissection has disclosed a fleshy and very vascular little body at the apex of the roots of the temporary teeth, and that it is a secretory organ and seems to be an outgrowth of the surrounding tissue.

This organ is believed to be the active agency in the absorption of the deciduous roots, by supplying a fluid which gradually dissolves the roots, perfectly removing both the organic and inorganic constituents, there being no residue left, in this respect differing from dental caries.

The absorbent organs lie between the crowns of the permanent and

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the roots of the temporary teeth, being held in contact with these roots by the crowns of the permanent teeth, which, as they develop, bring pressure to bear on these little organs, thus increasing their vascularity, which, of course, assists them in the secreting of the material to carry on the work for which they are provided.

That this condition exists is perhaps well demonstrated by the fact that, if the permanent tooth grows out of position, but is still in contact with the root of the temporary tooth, the root is either not absorbed at all, or only slightly so, upon the side of the contact. These are conditions which are very common, and which perhaps all have seen.

Another condition which perhaps is not common, but I have seen a number of cases, is where the temporary tooth has been retained for years in perfect condition, and without absorption of the roots. I believe this might result from either an absence or destruction of the permanent tooth germ, although it is believed that aggravated cutaneous diseases at the time of absorption have caused the destruction of the absorbent organs, in which case, of course, the absorption of the temporary roots had not taken place.

At the present time many writers attribute the absorption and removal of the temporary roots to some absorbent which may be supplied by some vascular tissue upon its vascularity becoming increased.

Based upon this theory, some have had the opinion that the enamel organ of the permanent tooth takes on an increased vascularity, thus supplying the absorbent.

This opinion is surely not well founded, because it is a fact that when the absorption of these roots is taking place, the enamel organ of the permanent tooth has not only ceased to be vascular, but has, in most cases, disappeared.

The condition under which the enamel organ operates is ample proof that its function in no way affects the deciduous tooth.

The enamel organ is made up of epithelial cells forming in the primitive dental arch, these cells or enamel organs sinking deeper and deeper into the tissue, until it meets with the papilla which later forms the dentine of the tooth, and finally all the activities of these little organs are confined in a membranous sac known as the Nasmyth's membrane.

It has also been found in a number of specimens that a layer of bone separated the developing tooth from the temporary roots.

Others have advocated that the pulp of the temporary tooth becomes transformed into an absorbent organ.

This belief has been contradicted by these facts: That the pulp has a strong vital force, and in some cases retains its vitality until the whole root is absorbed; also that the absorption is often confined to the side of the root, no absorption having taken place at the apex. These conditions surely contradict the idea that the pulp can be transformed into an absorbent organ, thus changing its functional activities.

It has also been claimed that the temporary roots are absorbed by the

pressure brought to bear upon them by the advancing permanent teeth; but to my mind such a procedure would not be sufficient to cause the physiological changes which are brought about in this stage of dentitional activity.

At the time the enamel organ of the permanent tooth has ceased to be vascular, or has disappeared, the crown of the permanent, and the roots of the deciduous tooth, are often found to be separated by a layer of bone, so I am led to believe that if we accept this pressure theory, to the exclusion of the presence of an absorbent organ, we would, in order to provide a plausible reason for the changes taking place under these conditions, have to resort to the theory that the active agency is brought about through the increased vascularity, and subsequent acquired glandular activity of the surrounding dermal tissue, caused by the developing permanent tooth and its action upon the parts.

It can readily be seen that such a condition would bring about entirely different results from those which we find.

Instead of the roots absorbing from the apex, as they normally do, we would very likely discover that this absorbent had attacked the whole circumference of the root, in which case we could not expect to have the present systematic development and eruption of the permanent teeth, for under such conditions there could not possibly be the uniformity of the action in the dissolution of the roots of the deciduous, and the subsequent advancement or development of the permanent teeth toward eruption. In other words, the course of the absorption could not be confined strictly to the line of development of the permanent tooth as we now find it under normal conditions.

Another very noticeable feature in connection with the absorption of these roots, is presented in cases where, as a result of decay, the nerve has become affected and perhaps diseased to the extent of causing ulceration, we will find that the process of absorption has been aborted and that the roots, if not extracted, are simply forced out in one direction or another, by the erupting permanent tooth.

We find in these cases that the roots have remained in the same condition as to the extent of absorption, as when, I believe, the destruction of the absorbent organ took place as a result of the diseased condition.

No doubt we have all seen cases where the deciduous molars, having become diseased in the early stages of absorption, have been crowded out and tipped over, and perhaps a root or roots protruding through the gum.

This is surely a great contrast to the conditions we find where the deciduous tooth has remained normal during this stage of dentition.

Now, in regard to the permanent molars, or as Gray terms them, "the superadded permanent teeth," the action is entirely different. As the tooth develops, the pressure brought to bear upon the bony parts, which are sufficiently yielding to give way without much, if any, absorption, allows

of the advancement of the tooth crown under the same conditions attending the eruption of the deciduous tooth, and without the intervention of any especially provided absorbent.

In summing up, I will say, that I believe this subject to be an important one, especially in its relation to the temporary teeth, and the inference we can draw, as to the necessity of the proper care and retention of these teeth in perfect condition during this period of dentition.

In conclusion, I believe that the multinucleated cells called odontoclasts, which, according to Gray, are developed at this time in the neighborhood of the deciduous roots, constitute an organ which I am pleased to term an absorbent organ, and is, under normal condition, systematically arranged at the roots of the temporary teeth, and in the line of the development of the permanent teeth.

QUICK METHOD OF REPAIRING A FRACTURED DENTURE

By John J. Schembs, Philadelphia, Pa.

Many successful practitioners are often confronted with small fractures in vulcanite dentures. They cannot give in some instances sufficient time to properly repair such cases, and as a result they must keep their patients for some time without their denture. This may be obviated by a very short method:

In repairing a cracked or broken plate make model of denture in plaster. Take inverted cone bur and cut entire length of fracture, thus making a groove about one-fourth inch wide and completely through the plate. With a large wheel bur, cut small grooves about one-sixteenth inch apart around the fracture. These small grooves must be perpendicular to the large fracture. Place denture upon model ready to pack. Cut vulcanite rubber in strips one-quarter of an inch wide and as long as the fracture. With a spatula place two strips together one upon the other and heat gently over flame of a bunsen burner. Care should be taken not to allow rubber to burn. When rubber has become soft and pliable place it in fracture and press hard with the thumb. With hot spatula trim off the surplus rubber. With a pledget of cotton saturated in chloroform smooth off rubber and place over it a piece of tin foil. Place case in flask, tighten bolts and vulcanize at 320° F. for 50 minutes. A repair made in this manner is practically finished when taken from the flask, while the time consumed is about two and one-half hours.

HOW TO BRING OUT RUBBER PLATES WITH A SMOOTH SURFACE ON BOTH SIDES

By Dr. X. Dodel, San Francisco, Cal.

Coat model and counterpart with a solution of liquid silicate of soda, applied with a brush. This solution may be obtained at any drug store. Should it be too thick, it may be cut with alcohol.

EDITORIAL

CAN DENTAL CARIES BE PREVENTED?

Bacteriologists have long sought for a specific germ in the causation of dental caries, believing that if it were found some agent could be secured to destroy these bacteria and in this way prevent dental caries. But no specific bacterium could be found. Perhaps the nearest approach to it is the lactic acid former, but aside from the lactic acid bacillus itself, there are many other species of germs that form lactic acid when environment and nutrient media are favorable.

So we find not one but many species of germs to be destroyed would we prevent caries of tooth substance by killing the destructive bacteria.

All sorts of mouthwashes have been tried, but caries continues rampant. It was found that no germicide, that would not be injurious to the tissues of the mouth, was active enough to destroy the mouth bacteria in so short a time as to make its use practical as a mouthwash, although many solutions, after being held in the mouth for several minutes, greatly reduced the number of active micro-organisms.

So prevention of dental caries by means of so-called germicidal and antiseptic mouthwashes has been unsuccessful.

But another line of investigation was taken up by Dr. F. W. Low of Buffalo, N. Y., some four years ago, which has brought results that promise to at least modify if not entirely prevent dental caries.

Dr. Low first made a critical examination of saliva from the mouths of many persons, noting the presence or absence of dental caries in these mouths. In the specimens of saliva he discovered potassium sulphocyanate in varying quantities. In mouths where it was abundant in the saliva, he found little or no decay of the teeth. While in mouths where there was little or none of the potassium sulphocyanate, he found the state of caries of the teeth quite alarming.

Upon further investigation he ascertained that potassium sulphocyanate was a solvent of gelatinous and glutinous substances and that it dissolved bacterial plaques from the teeth; and as caries is more directly caused from germs encased in these gelatinous plaques than from bacteria in general in the mouth, the destruction of these plaques on the teeth prevented the formation of caries at that point.

Further investigation and experiment showed the possibility of supplying the saliva with potassium sulphocyanate by systemic means, where there existed an insufficient quantity in the saliva.

To corroborate the findings of Dr. Low, others have lately carried on experiments along this line with the same satisfactory results, and it looks as though the possibility of prevention of dental caries is nearer at hand than we were wont to believe.

Dr. Low read a paper before the Northern Ohio Dental Society, at its recent meeting, giving the results of his investigation of this subject and that paper will be found published on another page in this issue of THE DENTAL SUMMARY.

We want our readers to peruse it and think about it.

If the treatment outlined by Dr. Low prove as efficacious as it at present promises, it would appear that a new era in dentistry would soon begin.

With the beneficial results of prophylaxis treatment in not only keeping the teeth clean and free from deposits, but in preventing much decay of the teeth and diseases of the gums, and in addition the systemic treatment for prevention of the formation of bacterial plaques on the teeth, it would seem that the future for dentists will be *preventive dentistry* rather than "*repair work*" as at present.

These means of prevention of dental and oral diseases furnish food for serious consideration and they should not be ignored.

ENLIGHTENING THE PUBLIC

For years different members of the profession have talked about educating the masses, in dental matters, through the public prints. But for one reason or another little has been accomplished in this manner. Objections have been raised against any dentist preparing such articles under his own name, on the grounds that he was in a sense advertising himself and making a bid for patronage. In towns and cities where there were a number of dentists no one dentist seemed willing to have another write such articles, and as no one would volunteer to prepare matter for newspapers in other places than his own, the instruction thus given has amounted to but little. In the meantime the newspapers and magazines generally have printed hints on the care of the teeth, along with complexion lotions, by the editor of the household department, generally objectionable, injurious and worse than none.

Members of the dental profession have watched this and said nothing. They have done nothing to directly correct such ill advice, and comparatively little to teach the public themselves in the care of the mouth and teeth. However, there seems to be a general awakening at present. A wave of enthusiasm regarding the establishing of dental clinics for the poor, the examination of school children's teeth and public dental dispensaries.

We are glad to see the change and feel encouraged about the dissemination of dental knowledge among the masses in this way, but the value of the press as an educator should not be overlooked.

Several months ago THE DENTAL SUMMARY conceived the idea of publishing in its pages short, instructive articles that could be torn out, without affecting the text of the journal, and used by any of its readers as copy for newspapers in any locality. From the number of marked copies of papers recently sent to the editor from various sections of the country we feel that our efforts are bearing fruit and we hope that more dentists will avail themselves of the opportunity of using these articles for educational purposes. And when credited as coming from THE DENTAL SUMMARY the public will recognize it as reliable information.

It is our intention to publish in each issue of THE SUMMARY one or more articles for instruction of the public and if made use of by our readers generally it cannot fail to bring beneficial results to the public, to dentistry and to the dentist himself. Let the good work go on.

A FUND FOR INDIGENT DENTISTS

At the recent meeting of the New Jersey State Dental Society active steps were taken towards raising a fund for the assistance of indigent dentists who have been members of that society for at least ten years.

The resolution was presented by Dr. C. A. Meeker and unanimously adopted.

It reads as follows:

"Whereas, The members of the society in this and other States in former years and at the present time are contributing towards the maintenance of infirm and aged members of the profession; and

Whereas, It is a recognized fact that it is a duty of the dental fraternity to do this work and that there being no system of thus aiding members of the profession; therefore, be it

Resolved, That the president, before the close of the meetings, appoint a committee of ten members to report at next meeting in 1910 for the formation of a trust fund, by subscription or a per cent advance in the dues, for the systematic relief of members of the State Society only who have been active members for not less than ten years and who may be in want, and that this committee be a permanent one to report to the society annually."

The committee appointed by the president consists of Drs. Charles S. Stockton, chairman, Newark, N. J.; C. W. F. Holbrook, C. A. Meeker, W. J. Thompson, M. R. Brinkman, Alfonzo Irwin, J. G. Halsey, H. Iredell, W. E. Truax, W. W. Hawke.

In their report to the society the committee recommended an increase in dues of one dollar annually, the additional dollar to be set aside each year to build a fund for aged and infirm dentists.

The committee also advised that a fund of \$1,000 be raised at once.

Members of different state societies have at various times discussed this matter but so far as we know the New Jersey State Dental Society is the first to take active steps toward the establishing of such a fund.

The dentists of New Jersey are wide-awake, go-ahead fellows, and are

not to be caught napping. They have been actively engaged in the work of furthering the examination of school children's teeth, the teaching of oral hygiene in the schools and the establishment of dental clinics. They have been more aggressive than any other state toward bringing about reciprocity between the states for the exchange of license to practice. And now they are taking up another worthy cause in the establishment of a fund for their indigent members.

It seems as though every state dental society should follow the example set by New Jersey and make a beginning of a fund for this purpose. The burden would be light and yet, with increased memberships in societies organized after the Illinois plan, the fund would amount to considerable within a few years.

At any rate it is a most worthy cause and one that should be at least seriously considered by every state dental society.

There is nothing more noble than to help a brother in distress.

WRITE LEGIBLY

Because a note of discharge written by Horace Greeley to one of his printers was used by that printer as a recommendation and secured him another position, do not think that bad writing will be of benefit to yourself, especially when writing for the press.

Some time ago an author complained of mistakes appearing in his printed article. The complainant, following the usual pleasant custom, shunted the responsibility for the mistakes upon the proofreader, facetiously remarking something about "a jag." Our lady proofreader was righteously indignant and suggested that if Dr. So-and-So wouldn't write so like the—her remarks were perfectly ladylike—there wouldn't be any mistakes.

Let this serve as a warning to contributors who do not want to see mistakes in their contributions, to write legibly when preparing an article for publication.

EVERY man who has won a real prize in the world has done it by right feeling, right thinking, right speaking and right acting. Upon these all genuine success depends.

CORRESPONDENCE

HOW LOCAL OPTION LAWS ARE AFFECTING DENTISTS

By George Zederbaum, D. D. S., Charlotte, Mich.

Editor of Transactions of Michigan State Dental Society; Associate Member Eaton County and Michigan State Medical Society.

AS a matter of fact this is dry reading from start to finish, but, bear up, dear reader, it is for your interest that it is written. On the 5th day of April, 1909, nineteen more dry counties in Michigan were added to eleven already in existence; and, not being fully satisfied with this grand local option wave, there was a further bill, known as the "Search and Seizure" bill introduced by Mr. Dickinson, and passed during the last session of the Michigan legislature, the act becoming operative on the 1st day of September, this year. Like the proverbial straw that broke the camel's back, this senate enrolled act No. 48 is certainly stretching the point to its breaking. I wish to quote only in part sections No. 1 and No. 26 and show wherein the dental profession has been absolutely ignored, either wilfully or negligently, and is placed on a par with merchants or laborers who have no conception about the human body above what the old physiology in the lower grades of grammar schools taught them. Section No. 1, in part, says: "It shall be unlawful for any person directly or indirectly to manufacture, sell, keep for sale, *give away or furnish*, any vinous, malt, brewed, fermented, spirituous or intoxicating liquors or any beverages *any part of which is intoxicating*, provided, however, that the provision of this section shall not apply to druggist or registered pharmacist selling such liquors under and in compliance with the restriction and requirements imposed upon them by the general laws of this State and section No. 26 of this act as amended."

Section No. 26 says, in part: "Every druggist keeping a drug store in any county adopting prohibition under this act shall by himself or his clerk be permitted to sell such vinous, malt, brewed, fermented, spirituous and intoxicating liquors for *medicinal purposes*, but only on the written (not printed or typewritten) prescription of a *regular practicing physician*, provided that the *physician* making such prescription shall state therein the name of the person for whom such liquor is prescribed, and shall issue the same in good faith and upon *personal knowledge* that the physical condition of the person for whom such liquor is prescribed, requires the same for *medicinal purposes*."—The same section No. 26, further says: "Every such druggist so keeping a drug-store as aforesaid, shall be permitted to sell

pure alcohol, or any vinous, fermented or spirituous liquors for art, chemical, scientific or mechanical purposes, (*not medicinal*) but only on the written application of the purchaser stating the purpose for which such liquors are purchased, which application shall be *subscribed and sworn to* by the person making such purchase."

Now, this act is all very well to the general public, but how are dental practitioners going to be affected? Of course, the law might be "stretched"—the following standard definitions being found for the word "physician": "A person skilled in the art of healing; one whose profession is to prescribe remedies for diseases." (Webster.) "One who is skilled in or practices art of healing. One who, being duly qualified, prescribes remedies for diseases." (The American Encyclopaedic Dictionary). "One whose vocation is the alleviation and cure of disease by therapeutic agencies. It includes the surgeon who conducts any surgical operation or treatment essential to life or comfort." (E. Darwin Hudson, Jr.), and there are many more like definitions all agreeing in the main that a physician is not necessarily an M. D. This plan, however, has been frustrated by the office of attorney-general who has given the following decision in case of challenged prescription in Osceola, one of the local option counties:

Lansing, Mich., Sept. 3rd, 1909.

Mr. Fred Trumbull, Prosecuting Attorney, Evart, Mich.

Dear Sir:—"I am in receipt of your two letters of the 31st ultimo, and the 1st instant respectively, in which you submit the questions—can liquor be lawfully sold by druggists on prescription of dentists and veterinary surgeons in option counties? In reply thereto will say that Sections 25 and 26 of Act 107 of the Public Acts 1909 prescribe the method by which liquors can be sold by druggists for medicinal purposes, and these sections limit the sale to persons presenting a prescription from a regular practicing physician or the written and signed application of the superintendent of any hospital, medical or educational institution where liquors are used only for medical, scientific purposes, and also permit the sale for art, chemical, scientific or mechanical purposes. The only way that intoxicating liquors can be purchased for medicinal purposes in local option counties, is upon the prescription of a regular practicing physician. Dentists and veterinary surgeons are not regular practicing physicians unless they are legally qualified as such. It is our opinion that intoxicating liquors cannot be sold in local option counties upon the prescriptions of veterinary surgeons and dentists.

Very respectfully,

(Signed) .

HENRY E. CHASE,

The Deputy Attorney General was kind enough to transmit a copy of the above in answer to my inquiry of September 7th in which I addressed the office of Attorney General as follows:

Deputy Attorney General.

Dear Sir:—I write for the Dental profession of Michigan, for information relative to section No. 26 Senate enrolled act No. 48, which allows only a regular practicing physician to write prescriptions for spirituous liquors, etc. Webster gives the following

definition for the word "Physician:" "A person skilled in the art of healing; one whose profession is to prescribe remedies for diseases." The dental profession is skilled in the art of healing of dental organs, oral cavity in general, often the tongue, the tonsils, the palates, the gums, the arches are legally treated by the Dental Surgeon, therefore the Dental profession comes under the category of the word physician as defined by Webster and as prescribed by the section mentioned. The Dental profession legitimately administers local and general anaesthetics and is very often called upon to prescribe brandy or other similar quickly acting stimulants. Are we to hunt up a physician, and have him write a prescription at a hazard of a total collapse or even death of the patient, while so doing, or can we legally write a prescription for it as we would for any other drug under the canopy of heaven?

I would sincerely thank you for your opinion on this question and this opinion, if you do not object, will be published in the official organ of the Michigan State Dental Society.

Yours very respectfully,

(Signed)

GEORGE ZEDERBAUM, D. D. S.

Editor of Transactions.

The reply received the following day was:

Mr. George, Zederbaum, Charlotte, Mich.

Dear Sir:—Yours of the 7th received. I enclose you a copy of an opinion given to Fred Trumbull, Prosecuting Attorney, Evart, Mich., under date of September 3, 1909.

Yours respectfully,

(Signed)

HENRY E. CHASE,

Deputy Attorney General.

Several good legal authorities say the act would not stand law in this respect, there being a material difference between a "Dentist," a man who simply passed the State Board, and a man who first obtained the degree of *Doctor of Dental Surgery* from a recognized Institution. But in the meanwhile what are we to do in these dry places? The law is not only irrelevant but as I stated before, may place some legal practitioner of our profession in a serious predicament. The law does not even take care of men practicing dentistry who have both the M. D. and the D. D. S. degrees, for they can not, according to the opinion given, be classed as *regular practicing physicians*. But why should there be such an incompetent law, belittling our noble calling? The greater majority of dentists are not drunkards; there is a much smaller proportion of them in our profession than in the medical. Our work is more exacting, more in breath to breath touch with our patients and a dental practitioner abusing himself in this manner would soon be unable to perform the hundreds of delicate operations coexistent with the practice of dentistry. Yet, in spite of the fact that dentistry has been repeatedly classed as a profession, (yes, even in Michigan!), and in spite of the fact that we in Michigan can legally write prescriptions for Morphine (a dangerous drug which very few of us ever use), and cocaine, we are placed in the category of mechanics and laborers, and even then, I do not see how we could legally obtain the necessary liquors and alcohol.

Again, if we did obtain alcohol for specific use in the alcohol lamp, we would be trespassing upon this great law, should we attempt to use *this alcohol* for any other purpose about the mouth. Ludicrous, is it not? Again, many practitioners prescribe "Liquor Antisepticus," an official preparation and a good mouth wash, indeed. Yet, under this act we can not legally prescribe it, since in 1000 parts of this "Liquor" 250 parts of alcohol are used. Further, (this sounds like the third degree), imagine yourself a legally practicing D. D. S., running to find a physician, who can not give you a prescription for your patient without seeing him personally and incidentally charging him or you an additional fee for his prescription! Meanwhile what of the patient? Why does the State institution at Ann Arbor have in the dental curriculum such studies as Physiology, Histology, Chemistry, General and Special Materia Medica and Therapeutics, Special Pathology, Oral Surgery, Anaesthesia, etc., all leading to the degree of D. D. S.? If the graduates of that school are not qualified to prescribe, why should the State Board examine candidates for dental licenses relative to these subjects? Why prosecute in case of death? Why license a D. D. S. if we are to be driven back 75 years to the days when the blacksmith and the barber wielded the turn-key? I wonder how long would the respected Dickinson or any of our other learned Solons stand on ceremony if he were suffering from dental troubles such as we see every day, demanding the use of liquor or alcohol? We should have a committee connected with our State Society to look into all legislation and guard against any such infringement on our rights.

The legal definition of "dentist:" "one whose profession it is to clean and extract teeth, repair them when they are diseased and replace them with artificial ones when necessary" does not hold good now. It is insufficient and should be revised. Dentistry made greater strides within the last twenty years than any other profession; in fact it made these strides so rapidly that most of our agricultural law makers could not keep up with them. I wonder what effect a few dental journals like the *Summary*, *Brief*, *Cosmos*, etc., and the *Dental Formulary* of Prinz. and Marshall's recent work, would have if we could distribute these to each man in the Senate? Taking it all in all, the law, as it stands, is degrading the profession of Dentistry and we shall and will turn the wheels of the next legislature in our direction.

There are more people dying for the lack of a kind word than from disease. A smile is God's own medicine.

MISCELLANY

A HALF HOUR'S AUTOBIOGRAPHY

By Dr. Henry F. Bishop, New York City

IT IS my conviction that I ought to be up and doing, and that I have already lost a full half-hour by too long a nap, which has exhausted half the time I had sacredly set aside to perform a certain piece of work. Which work was to be a complete autobiography from my birth to the present time! I am well aware that it will be a busy half hour's work. But what of that? Nobody else in the world will do it for me—and what a great pity to have such a long life go out in darkness! You see, Mark Twain has me at a great disadvantage. He had a bright, talented daughter, Susan, who was never going to let her father suffer any sort of neglect; and so she wrote him up, and now he is rehashing the dish. Do you suppose we should ever have heard of Twain if Susan had not perpetuated his memory?

But my half hour is slipping by, and the preservation of my memory must be accomplished if possible. So here is to my work in good earnest.

In a quiet little town of Connecticut called Lisbon, on the third day of April, 1820, there was born a little freeman, and that was I. As I say, I was born a freeman on "Freeman's Meeting Day," while the State election was still taking place in all the towns. My parents were congratulated on having the homeliest baby in the whole town, as I have been told. As to my blood—the Henry Adams, who emigrated to this country and settled in Braintree, now Quincy, Mass., the great, great grandfather of John Adams, the second President of the United States, was also the great, great, great grandfather of my humble self on the maternal side.

As to my personal life I had many and varied experiences, but not wishing to weary you with these I will at once tell you what, if anything, I have done to deserve an autobiography:

I remember when a small boy asking my mother what dentists did, for I didn't know, and she told me "they worked at repairing teeth." Later my father used to tell me about Dr. Wooffendale, an Irish doctor who came to this country just about one hundred years ago and whom he employed. Dr. Wooffendale took calves' teeth, and filing them down to the proper shape and size, pivoted them on the roots of natural teeth for his patients. My father accomplished the same work himself when that of Wooffendale had failed. You see how easy it is to acquire dental knowledge. Be that as it may, father had four sons who became dentists, of

whom I was one. When I first commenced my dental study European countries seemed to be in advance of America in dental science. What few text books there were, were in French or German, but the practice was mostly in the hands of ignorant barbers, and it became a serious duty to rescue the profession and make it a science for skilled artists and surgeons.

Americans soon took the lead and made the practice what it is today, really an American profession. Not a large, enlightened city in the world but has American dentists now practicing in its midst. Some of these cities have more than a score who hold almost all the practice worth glean-
ing. America was the first country to establish a dental college well equipped to teach the science, and now has about thirty of these institutions scattered among the largest cities.

Permit us to boast a little of what we (as dentists) have accomplished for all mankind in the discovery and introduction of anæsthetics. In 1846, or just before Horace Wells, a dentist of Hartford, Conn., discovered what was known then as "laughing gas," or oxide chloride. When properly administered to a patient it would prevent suffering under severe surgical operations. In 1846 Dr. Morton, a dentist practicing in Boston, learned from Dr. Jackson, a chemical professor in Boston, that ether would prevent suffering, and through Dr. Morton's perseverance ether came to stay as a valuable anæsthetic in surgery. In Boston hospitals that year, Dr. Morton let his discovery be known as *Letheon*. He made his formula known among his fellow-dentists, of whom I was one (for a consideration, of course), and it was compounded of ether and calomel, which latter was no use except as a blind to protect the simple sulphuric ether from being too easily discovered and thus hurting his financial interests in the sale of *Letheon*.

I was the first dentist to give the *Letheon* in Worcester where I was then in practice. Its success was marvelous. I visited Springfield, Hartford, New Haven, and New York, and was the first to introduce the anæsthetic in those several cities to my fellow-practitioners in their offices. In Hartford I met Dr. Wells, who knew as much about it as I did. In New Haven Dr. Weit was taught and in New York the Burdells and Dr. T. B. Gunning were instructed, and in each case successful and interesting experiments were made for the first time with this anæsthetic in those cities. The year following (*viz.*, 1874) Dr. Simpson, of Glasgow, discovered chloroform, which nearly set aside the use of ether for quite a period. But finally ether asserted itself as more safe than chloroform. I might also state that the dentists have the credit of inventing dental splints, so necessary in sustaining the under jaw when broken, till nature has time to reunite the fractures, as in the case of Secretary Seward, who was the victim of an assassin's attack upon his life. The surgeons had to call in the dentists to help his recovery. So again in cleft palates and other deformities and irregularities arising from premature or retarded dentition. They all properly belong to the dental practice as well as the æsthetic art

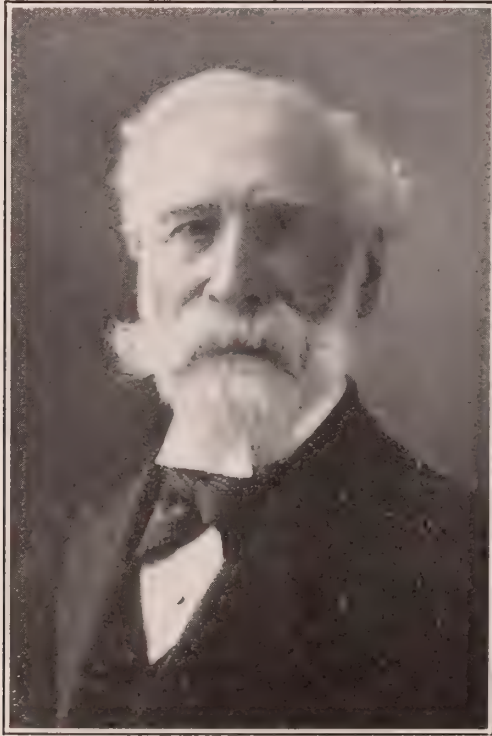
in helping to make the human face as beautiful and as perfect as conditions will allow.

I fear I may weary my friends with such a long account of my professional experience, and exhaust more than thirty minutes in their relation. But my friends must remember I was in practice about fifty years in this country and in Germany. It has been my good fortune to have the personal acquaintance of almost all the American dentists who went abroad to practice in the large cities. When I left my Worcester practice to practice in Hanover, Germany, I went equipped with the best possible introductions to Americans there, from those I left at home who were equally prominent here such as Dr. Keep and the Tuckers of Boston, Townsend and Trueman of Philadelphia, Harris and others of Baltimore. This gave me a useful field abroad to help form a European society of American dentists, which I did, and was honored with one of its offices. This good fortune gave me an intimate personal acquaintance with Evans of Paris, Abbott and Miller of Berlin, Dr. Jenkins of Dresden, and others who welcomed me into their homes and hearts. I shall be pardoned if I speak of Dr. Evans of Paris as I am about to do, for I very much admire him for just what he did. When he had accumulated millions, and had become renowned for his services to the Emperor and Empress, and widely known throughout the world for his efforts in ambulance service in war, his chief interest became to do some lasting good for America before he died. He had conceived the idea of establishing a home for American girls coming to Paris, which would protect them and give them superior advantages while they pursued their studies in music and art. This project failed through some controversy in regard to his property, after his death, but his other idea, that of an American Museum, is now finally to be realized in Philadelphia.

The last call I made upon Dr. Evans I found him in his office receiving his patients and friends and still at work for them. He greeted me as coming just at the right time, as his patient was just about leaving, and he wanted me to sit with him till another expected caller should arrive, and meanwhile he would partake of his simple lunch which Mrs. Evans had put up for him in a basket to carry to his office. I had often dined at his palatial table at his residence, and as an honored guest at his right hand, but I never had a more enjoyable time—though I ate nothing, he gave me good things for digestion. Bless his memory, I loved him.

In Germany I found myself astonishing the German idea of reverence to Royalty. At Hanover Prince Albrecht had a palatial residence, and the young princes, his children, were committed to me for the care of their teeth. When I was sent for to come to the palace the little boys were assembled with their mother, the princess, a very accomplished lady, who speaks English fluently. How shocked some of the officers and attendants must have been to see me take up the youngest son in my arms and give him a hearty smack of a kiss in his royal mother's presence! It violated

all rules. But the human appeal of the sweet little child looking confidently up into my face made me forget all else, and I think the gracious lady forgave me, for she only smiled. When I told the incident at home to the German household I realized the enormity of my offence in the eyes of the simple German ladies with whom I was living. After my return from Germany I did not resume practice, but enjoyed the leisure of a quiet life, with some genealogical work which I wished to put on record, and frequent travel. My eightieth birthday found me with a pleasant party of friends in Mexico. My eighty-eighth birthday is close at hand—



Dr. Henry F. Bishop.

but as I said at the start my autobiography was shortened by a nap, and the clock warns me that my time is up. Perhaps my readers will say with Sancho Panza: "Blessed is the man who invented sleep."

SOCIETY ANNOUNCEMENTS

EXECUTIVE COUNCIL, N. D. A.

A meeting of the Executive Council of the National Dental Association will be held at the Hotel Hollenden, Cleveland, O., at 10 o'clock A. M., Saturday, November 6, 1909, for the appointment of officers Sections, and the standing Committees and the consideration of such other matters as may properly come before it.

Members of the Association having any business to present are requested to attend this meeting.

BURTON LEE THORPE, *President.*

CHARLES S. BUTLER, *Secretary.*
Buffalo, Sept. 11.

OHIO STATE DENTAL SOCIETY

The forty-fourth annual meeting of the Ohio State Dental Society will be held at the Great Southern Hotel, Columbus, on December 7, 8 and 9, 1909.

The program of papers and clinics will be second to none of those of the past.

A more extended notice will appear in the November number of the SUMMARY.

Mark those dates off your appointment book *now* and come prepared to stay through the meeting.

F. R. CHAPMAN, *Secretary*, 305 Schultz Bldg., Columbus, O.

NEW YORK ALUMNI ASSOCIATION, XI PSI PHI FRATERNITY

The annual Fall meeting of the New York Alumni Association of the Xi Psi Phi Fraternity, will be held at the *Hotel Astor, Times Square*, New York City; on *Wednesday Evening*, October 13th, 1909. The meeting will be called to order promptly at 8 P. M.

As officers for the ensuing year are to be elected and several important changes to be made in the constitution, it is urgently requested that *Every Alumnus* of the Xi Psi Phi Fraternity residing in or about New York City be present. For further particulars address J. Norbert Gilson, Secretary, 6730 Vanderbilt Ave., Brooklyn, N. Y.

NEW JERSEY STATE BOARD OF REGISTRATION.

The New Jersey State Board of Registration and Examination in Dentistry will hold their semi-annual meeting in the Assembly Chamber of the State House at Trenton, N. J., beginning Monday, December 6th, and continuing through the 7th and 8th.

Applicants for examination must file photograph and preliminary credentials with the application or it will not be received.

Sessions begin promptly at 8 A. M., each day, Monday, December 6th, devoted to practical examination. Tuesday and Wednesday, theoretical examination.

Applications must be filed ten days prior to the meeting.

CHARLES A. MEEKER, D. D. S., *Secretary*.
29 Fulton St., Newark, N. J.

OHIO STATE DENTAL BOARD

The Ohio State Dental Board will hold its regular fall meeting in Columbus on October 19-22, 1909, for the examination of applicants for license.

All applications, with the fee of \$25.00, should be in the hands of the secretary not later than October 9.

For further information and blank applications address F. R. Chapman, Secretary, 305 Schultz Bldg., Columbus, O.

UNION MEETING NEW YORK DISTRICT SOCIETIES

The union meeting of the Seventh and Eighth District Dental Societies of the State of New York will be held at Iroquois Hotel, Buffalo, N. Y., October 29-30, 1909.

WALTER H. ELLIS, Secretary, Buffalo, N. Y.

**G. V. BLACK DENTAL CLUB**

The members of the G. V. Black Dental Club (Inc.) will hold their mid-winter clinic in St. Paul, Minn., February 24th and 25th, 1910. For further particulars address R. B. Wilson, Secretary, 409-10 Am. Nat. Bank Bldg., St. Paul, Minn.

NEWS AND OPINIONS

The Dentist's Opportunity.

What would be thought of—what ought to be said and done to—a surgeon who, called upon to perform some minor operation, should discover some much more serious derangement and pay no attention to it—merely complete the little job, but—upon the incision and turn his patient loose?

How long could that surgeon retain the confidence of the public?

How long would he be allowed to practice? Probably just long enough for his negligence to be discovered, long enough for the more serious complication to develop.

Suppose the derangement to be one that, while not necessarily fatal, were of such nature as to produce mental hebetude, physical degeneration and general atrophy: how far would that surgeon be responsible for a dwarfed and stunted life; for a life of hopeless inferiority, a burden to its bearer and all who came into contact with him?

It is hardly a thinkable condition. There probably is not and never has been a member of the medical profession in any branch so callous, so indifferent, to the welfare of humanity as to be guilty of such neglect.

What, then, should be thought of, said about and done to dentists who are guilty of such neglect, not once or twice, but over and over again?

Instances multiply in which young patients have presented for some simple repair work—a filling, perhaps—who have borne upon every line of their physiognomies the plain evidence of mouth-breathing, of the presence of adenoids and enlarged tonsils, of misplaced teeth, contracted arches and many other causes of abnormality, who have been allowed to leave the chair without so much as a word of warning to parent or guardian concerning the serious, sometimes almost worse than fatal, conditions immediately impending?

Cases are known to orthodontists in which filling after filling has been put in and extractions made in mouths so clearly, plainly and obtrusively abnormal that only ignorance of the most dense type can be alleged as an excuse for silence—and certainly ignorance is itself utterly inexcusable in this age, particularly among members of a profession that has the right to boast that it is the most advanced, most enlightened, most intelligent on earth to-day.

The duty of the general practitioner in

all such cases is so plain that even the merest reference to it should not be necessary.

So direful are the consequences of neglect, and so certain and easy is the remedy, that no dentist should hesitate for a moment, in the presence of the well-known symptoms, to make a full, complete and emphatic report, accompanied by an earnest recommendation to submit the case to a specialist, urging the matter upon the attention of parent or guardian in such manner as to leave no doubt in the mind of the necessity for immediate action.

Many cases are known in which the presence of calcarious deposits and pus have indicated clearly incipient pyorrhea in which the dentist has merely removed the deposit and applied some temporary palliative, plainly stating to the patient that the trouble could not be cured but that it might wear away in a few years—“Anyhow, we’ll wait and see!”

Yet it is now definitely and positively known that *every case* of pyorrhea can be cured, radically and completely cured—when taken in time, and just as certainly known that unless it is cured, the most direful results are sure to follow, both local and systemic.

If the general practitioner is aware of his deficiencies in such cases, his duty is evident. Because cases are beyond his knowledge and skill it should by no means follow that nothing can be done. He should see that such patients pass under the care of men who have both the education and the technical ability to give them the proper care—and, in the meantime, avail himself of the abundant opportunity now existing to acquire the knowledge and ability necessary to practice the higher branches of his profession.

Of course, many cases that come first under the eye of the general dental practitioner require the attention of the rhinologist and the orthodontist; and for this reason the suggestion made at the convention of the Northern Indiana Dental Society that Get Together Clubs be organized everywhere, to be made up of members of all branches of both dental and medical professions, seems particularly apt and timely, leading, as it surely will, to close and friendly cooperation that can result only in greater good to humanity at large—and surely this is the aim of every practitioner in whose mind his life work assumes the dignity of a profession and not a trade, of a vocation, not merely an avocation.—G. E. H.

The Northern Indiana Convention.

It has been the good fortune of the writer to be able to attend a number of dental conventions during the past year, and such experiences have been so useful, instructive and interesting that the wonder has been that any dentist should be willing to deny himself the privilege of attending and taking part. Just how any member of the profession can afford to absent himself from these conventions, or remain outside the ranks of the various associations under the management of which they are held, is difficult to understand. That the membership in the associations is growing rapidly is a matter of course; and if the various membership committees could devise some means of impressing upon the minds of outsiders even a part of the good things they are missing, the membership list would very soon include every active, practicing dentist in the profession. Nothing but good, both to the practitioner and his patients, can come of such membership, and an active participation in the work of the various conventions. The only regrettable feature visible lies in the seemingly necessary fact that conventions are held so far apart. The time surely will come when dentists will look forward to these meetings with the most pleasurable anticipations as oases in the routine of professional life, and as opportunities to fit themselves for the better, easier and more successful practice of one of the most arduous, confining and least remunerative of the professions.

These remarks have been prompted by attendance, at the convention of the Northern Indiana Dental Association, held at the beautiful little city of Goshen, Indiana, on September 7 and 8. Every minute of these two days, extending far into the night of the first day, was crowded with pleasant and helpful experiences, the memory of which will remain a green spot in a busy life.

The officers and committees having in direct charge the work of preparation and entertainment are to be heartily congratulated upon the abundant success attending their efforts. Every feature showed marks of care and thought, and the program was carried out without a hitch. The hall in which the meetings were held was ideal for the purpose; the accommodations could not have been improved; the papers were carefully prepared, well delivered, and the discussions most interesting; while the atmosphere of fraternity, harmony and good will that prevailed throughout made the occasion a most enjoyable one. Of all the conventions thus far attended during the year, the Goshen meeting made decidedly the strongest, most enjoyable and lasting impression, the only regret being that there were some dentists within the

district that did not make the necessary effort to overcome preventing circumstances, and so missed two days of enjoyment, relaxation and most decidedly helpful education.—G. E. H.

Don'ts for the Refrigerator.

Don't buy a cheap one; the best is the cheapest in the end, and—

Don't let the "ice-man" drop the ice in, or break the ice to fit in the box, especially if it is porcelain-lined.

Don't let anything hot be put in it to cool—cool the food first.

Don't put any odorous fruit or vegetables in the ice-box if there is milk, butter or water in it; these quickly absorb odors and flavors.

Don't leave milk, butter or water uncovered in the refrigerator—or anywhere else.

Don't keep the refrigerator in the kitchen if there is any other available spot; if you are obliged to, don't be afraid to use newspapers lavishly; wrap the ice in them, and cover the outside with papers also; it will tend to reduce the ice bill.

Don't think because it is frozen there are no germs in it; great caution should be exercised when buying ice if it is not artificial.

Don't neglect the drain-pipe or the dripping-pan of the refrigerator; clean it often, and use a few drops of disinfectant (odorless, of course) and a small piece of washing-soda in the water in place of soap, and your ice-chest, box or refrigerator as it may be, will always keep fresh and sweet.—*The Delineator* for October.

Lawrence J. Anhalt, business manager for David Warfield, brings in from the road the story of the manager of a thrilling melo-drama, in one scene of which a husband enters one door an instant after an admirer of his wife has made his exit from another. During a run of a week in one city the manager noticed that one man, obviously from the country, went in every night. Finally he remarked to the man that he must enjoy the performance.

"Tolerably so," replied the playgoer, "but some night that husband is going to catch that other feller, and I want to be on hand to see what happens."—*Lippincott's Magazine*.

Dr. W. H. O. McGehee, dean of the dental department of the University of Virginia, has resigned his connection with that institution, and will remove with his family to Cincinnati, where he has been elected professor of operative and clinical dentistry and superintendent of clinics in the Ohio College of Dental Surgery, the second school of dentistry to be established in this country.

Robberies.

August 3.—Several hundred dollars worth of gold, silver and platinum plate taken from the dentists of Jamestown, N. D.

August 4.—Dr. A. Lind, Kankakee, Ill., \$50 worth of gold fillings.

August 5.—Several offices at Green Bay, Wis., were entered and various articles of worth were removed.

August 5.—Four dentists of Oshkosh, valuables worth \$175.

August 4.—Dr. C. H. Thompson, Goshen, N. Y., gold worth \$40.

August 6.—Dr. Paul Featherstone, Valley City, N. D., all of his gold and platinum filling.

August 7.—Dr. W. A. Mvers, Auburn, N. Y., \$140 worth of gold filling.

September 7.—Dr. Elmer Purington, Auburn, \$4 worth of gold.

September.—Dr. John Coub, Seneca Falls, N. Y., \$250 taken. Drs. H. L. Belcher and J. H. Sahler, Seneca Falls, about \$100 in gold fillings, platinum and bridgework in each office.

August 9.—Dr. J. L. Helmer, St. Cloud, Minn., teeth and valuable metals worth \$50. An attempt was also made to enter the office of Dr. M. F. Cook.

August 14.—Dr. Frank Howard, New London, Ct., \$24 worth of gold. Dr. A. A. Bishop, New London, secured some old gold, not possible to determine the value.

August 16.—Dr. Geo. W. Andrews, Woonsocket, R. I., \$20 worth of material taken.

August 16.—Dr. A. P. Cote, Woonsocket, \$100 worth of gold.

August 16.—Dr. J. N. Wilson, Austin, Texas, \$60 worth of gold bridgework.

August 17.—Drs. R. R. Schaettle, H. J. Hanson, A. T. Rasmussen, and Geo. F. Hauser, \$150 worth of gold in each place. Failed in efforts to rob Dr. J. Schleiter and the Schaeffer-Pierce Dental Supply Co.

August 18.—James & Gallagher, Winona, Wis., loss \$40. Milton & Kinstad, Winona, loss not given.

August 21.—Tacoma Dental Laboratory, Tacoma, Wash., \$60 worth of gold.

August 21.—Dr. M. J. Collins, Bangor, Me., gold and dental appliances valued at \$100. Dr. F. H. Gordon, Bangor, dental stock and work worth \$50.

August 22.—Dr. M. E. Williams, Troy, N. Y., gold valued at \$60.

August 22.—Dr. H. R. Brown, Lewiston, Me., \$80 worth of gold and dental goods.

August 22.—Dr. L. A. D'Argy, Waterville, Me., gold and dental work worth \$70.

August 23.—Drs. T. F. Boyd and G. F. Usener, Houston, Texas, loss \$200.

August 25.—Dr. Scipio Bond, Anoka,

Minn., gold worth \$150, and a check for \$25.

August 28.—Dr. C. F. Peterson, Maukato, Minn., gold and platinum worth \$40.

August 28.—Dr. Sweeney, Owatonna, Minn., large quantity of gold and platinum.

August 29.—Dr. F. E. Smith, Scranton, Pa., \$50 worth of gold filling.

August 29.—Dr. F. W. Seydell, Chicago, Ill., \$30 worth of gold leaf.

August 31.—Drs. Mayoock, Pettebone and Crary of Wilkesbarre, Pa., large quantity of gold.

August 31.—New York Dental Co., Cincinnati, O., gold filling valued at \$75.

September 1.—Dentists of Marysville, Cal., hundreds of dollars worth of gold.

September 6.—Six dental offices of York, Pa. Large amount of gold and some money secured.

September 6.—Dr. E. E. Peek, Waterloo, Ia., \$150 worth of gold foil, teeth and dental instruments.

September 6.—Dr. C. W. Bruner, Waterloo, Ia., loss \$150.

September 11.—Dr. Wm. E. Maguire, Springfield, Mass., \$50 in gold.

September 11.—Dr. F. E. Negus, Springfield, Mass., about \$60 worth of gold.

September 8.—Dr. J. H. Calder, Council Bluffs, Ia., about \$75 worth of gold, teeth, etc.

September 8.—Dr. W. D. Patterson, Council Bluffs, Ia., about \$75 worth of gold, teeth, etc.

September 8.—Dr. Hasek, Council Bluffs, Ia., \$110 worth of material.

August 13.—Burglars entered the dental office of Dr. Grace Hammond, in the First National Bank building, and by prying open her desk, gained access to a drawer which contained \$34 in cash, a check and about \$50 worth of gold and gold plate. The police began an investigation, but nothing was accomplished. The following Thursday she entered the office as usual and to her surprise found the stolen cash replaced together with the check.

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A series of articles beginning in the October *American Magazine* promises to make a profound impression on this country. They are to be published under the general heading of "Barbarous Mexico," and their author is John Kenneth Turner. They are to deal with interior conditions in Mexico and in particular with the atrocious treatment of the native Indians and some 8,000 Chinamen who are in actual bondage, subject to sale among the rich henequen planters, or even to death by hanging or by beating as may be decreed by the slave's owner.

DISCOLORATION.

**The Causes and How to Remedy Them
When Using Ascher's Artificial
Enamel.**

By Dr. Hugo Ascher, Berlin.

Discoloration is absolutely impossible if the Enamel is rightly treated. If the material was at fault, every filling inserted would discolor, not an occasional one as is generally the case. There are three reasons for discoloration existing.

First—The entering of foreign pigments or secretions into the filling. If the enamel is properly mixed and introduced under sufficient pressure, there is not the slightest porosity, (as exact measurements have proven) and an intrusion of foreign matter is impossible. If, however, the material has been mixed indifferently and not properly condensed, it contains loose particles of powder that have not been compounded and spaces which, in mixing, being pressed into the tough mass, are filled with air. The enamel is porous and liable to absorb foreign matter. To avoid this mix quickly, incorporating all powder possible, until mass curls from the slab when the flat side of the spatula is run lightly over it, then thoroughly mix with heavy spatulation to force out the air particles. Introduce under heavy pressure for the same reason. If the pulp is nearly exposed, use cavity lining to avoid strangulation. As long as the material is plastic, everything coming into contact with it must be non-metallic and absolutely clean.

Second—If the surface of the filling is rough or poor margins exist, foreign pigments, which change the color of the whole tooth by deposits, will influence the surface and boundaries. The deposits of the pigments on a rough surface are much more intense and stay considerably stronger. The roughness is caused by using coarse strips and disks, insufficient polishing and by destroying the upper surface in cases where the filling is exposed to the saliva too soon. To avoid this, construct an exact and nicely finished margin. The filling must not come below the margins of the cavity. A very smooth, highly polished surface must be obtained, and there must be sufficiently long protection against saliva, so much more the thinner the enamel was mixed. Stir liquid thoroughly each time, discard residue of bottle and keep rubber dam on for at least twenty minutes.

Third—The Enamel in itself contains no substances, which through any reaction could shape any pigment. It does contain pigments usual in all silicate and other cements and these are, of course, sensible to certain influences. Sulphureted hydrogen and proceeds of reduction can be observable and cause a darkening. But both

forming of sulphureted hydrogen and proceeds of reduction are hardly possible and one can scarcely attach much importance to them. Should they appear, however, they could only cause a superficial discoloration "a slight indication," which may be easily removed by a toothbrush or eventually by a little tooth powder. In this case a deeper or stronger discoloration is impossible.

In the darkening of lingual fillings one thing must be observed. Discoloration of the surface in consequence of roughness is more liable here as the lingual side of the teeth cannot be kept as clean. In addition, in a mirror a filling always appears considerably darker on account of the optical difference of the tooth substance.

How firmly rooted in the heart of Young America is baseball is eloquently portrayed in the picture on the front cover of the September *American Boy*. In that issue there are more chapters of the fine serials now running, among them *The Young Continentals* at Lexington and *Winning His Shoulder Straps*. There is the beginning of a two-part serial, *The Senior and the Signals*, a story of college baseball. Among the short stories are: "Because of His Reputation," containing a good moral on college athletics; *Why the Covite Won*, what two boys learned while building their power boat; *Over Monkeegan Falls*, an extremely risky swimming adventure; *How the Loser Won*, telling of a boy's sacrifice; *Three Men and Two Bears*, a perilous hunting trip. Some of the interesting and instructive articles are: *The Cost of Going to College*; *Sons of Farmers Who Have Worked Their Way Up*; *What Boys Are Doing*; *How To Play Football*; *Barry of the Great St. Bernard*. The regular departments are filled with the information specially desired by boys who love to do things; there are 75 illustrations. \$1.00 a year. The Sprague Publishing Co., Detroit, Mich.

West Virginia State Meeting.

The West Virginia Dental Society will hold its annual convention in Wheeling at Stratford Springs hotel for three days beginning October 13.

Sad Death of Prominent Dentist.

Dr. Joseph William Wassall, 51 years old, more than thirty years a dentist in Chicago, was lost overboard and drowned Saturday night off Racine, Wis., while on a yachting cruise as the guest of Jas. O. Heyworth, a contractor and brother of Lawrence Heyworth. The tragedy occurred in a heavy storm and, although the night was very dark, the crew and passengers of the boat witnessed the final sinking of Dr. Wassall, but could not bring the boat around in time to rescue him.

"John Brown's Body."

The October *American Magazine* contains a very remarkable and important historical interview with John Brown, Jr., the oldest son of the John Brown, of Civil War fame and glory. Miss Eleanor Atkinson is the interviewer and, regarding the physical appearance of his father, she reports John Brown, Jr., as saying:

"After 1856 he was usually in rags, unkempt, gaunt, much older in every way, than his years. In Kansas he was a hunted man, a price upon his head. He laid out in swamps with a handful of men, and suffered much from fever and ague. His hair and beard grew long and wild, and turned gray. This made him look very strange to us, for he never wore a beard at all until he went to Kansas. He was naturally fair, with gray-blue eyes and brown hair. He was only five feet ten, and when in full vigor weighed only one hundred and forty pounds, but the 'officials,' who had warrants for his arrest in Kansas, were looking for a fierce, dark man about seven feet high, such was the terror he inspired. He was known throughout Kansas—went into towns when it was necessary to do so, went in and came out unmolested. Armed posses with warrants were afraid to take him. And everyone who saw him described him differently.

"It was a singular thing that men who knew my father well, in days before the free-soil struggle began, when he was a quiet business man here in Ohio, Massachusetts and New York state, were never able to describe him accurately. People usually thought him taller and heavier than he really was. One or two have spoken of him as 'massive and dark, a powerful man.' It was his aspect that gave this impression. His head was well up, between square shoulders; he had a fearless, challenging look, a firm mouth, a jaw thrust forward. No one could see him and not know him for a resolute man. But old—old! In Kansas he was called 'Old Man Brown.' He was only fifty-nine when he died, but he looked to be seventy.' "

The Ransom & Randolph Co. announces the addition of Hutchinson's Bridge Wax Moulding Plate to its line of specialties. This plate, the invention of T. C. Hutchinson, D. D. S., Decorah, Iowa, contains 158 depressed moulds of the buccal and occlusal surfaces of the bicuspsids and molars, arranged in rights and lefts, uppers and lowers, covering a wide range of sizes both in lengths and breadths. These moulds are arranged in singles, pairs and fours, very conveniently located, making the production of wax dummies for cast bridges a very easy and simple process. Further information may be had for the asking.

The New Tariff in a Nutshell.

Summing up the changes made in the tariff as shown in the various Senate documents, the new act has increased the Dingley rates in 300 instances, while reducing them in 584 cases. The increases affect commodities imported in 1907 to the value of at least \$105,841,201, while the reductions affect not more than \$132,141,074 worth of imports. Four hundred and forty-seven million dollars' worth of imports (on the basis of 1907) remain subject to the same duties as under the Dingley tariff. That is to say, 65 per cent of the total imports remain subject to the old rates, more than 15 per cent of the total will be subject to higher duties, the average increase amounting to 31 per cent over the Dingley rates; and less than 20 per cent of the imports are to be subject to lower duties, the reduction being estimated about 23 per cent below the Dingley rates. All of these figures greatly underestimate the increases of duty for the following reasons: First, they do not take into account the numerous changes (nearly all increases of duty) due to changes in classification, similar to the instances cited in the case of sawn wood, structural iron, and cotton cloth; second, a large part of the imports subject to ad valorem duties will now be assessed on the basis of domestic prices instead of the prices in foreign markets (with due allowance for freight and duty), as has hitherto been the case; and, finally, the possibility, even if remote, of the application of maximum rates to imports from some of the foreign countries, which will amount on the average to an increase of more than 50 per cent over the new rates. The real increase of duty will not be accurately known for a year, until we have full returns of the imports and duties actually levied under the new law under the decisions of the Board of General Appraisers and the new Customs Court.—From "The Payne-Aldrich Tariff," in the *American Review of Reviews* for September.

Vermont State Dental Society.

At the 33rd annual meeting of the Vermont State Dental Society, held jointly with the New Hampshire State Dental Society, at the Wiers, N. H., the following officers were elected, for the ensuing year: President, Dr. C. F. Meacham, Bellows Falls; first vice-president, Dr. A. Z. Cutler, Bennington; second vice-president, Dr. L. E. Mellen, Middlebury; secretary, Dr. Harry F. Hamilton, Newport; treasurer, Dr. W. H. Munsell, Wells River; executive committee, Dr. F. H. Brown, Enosburgh Falls; Dr. Dana E. Dearing, South Royalton; Dr. Thomas Mound, Rutland.

A Story of the Real West.

There are two kinds of Western stories familiar to the reading public—one, that written by the author who knows his subject either by having actually dwelt in that section, or at least by having painstakingly studied the writings of people who have; the other, the sort produced by writers who have apparently acquired their impressions from performances of the twenty-thirty-cent "melodrammers," helped along by a lurid imagination. A capital story of the Number One sort is the complete novel in the October *Lippincott's*—"Melissy," by William MacLeod Raine, who also wrote that popular book "Ridgway of Montana." The scene of "Melissy" is likewise laid in Montana, and part of the dramatic action is supplied by one of the relentless wars between cow-boys and sheep-men which have caused so much blood-shed in the cattle country. The characters are natural and not a bit over-drawn. "Melissy," the heroine, is the daughter of an Arkansan who has migrated to the West and taken up a mining-claim—only to lose it through shiftlessly neglecting to comply with the laws. He regards the new claimant as a deadly enemy at first, but after a time of stress and strenuousness, the Southerner comes to the conclusion that the other man isn't a bad fellow after all, while his daughter looks on him as a very good fellow indeed.

There is plenty of other reading matter besides the novelette in the October *Lippincott's*—short stories, special articles, verses, a humorous department, and miscellany. It's a rare good number.

Sauce for Goose and Gander.

The celebrated hatters' case in which the United Hatters of North America were held to be liable for damages by the United States Supreme Court for boycotting the products of the hat factories of D. A. Loewe & Co. in Connecticut, and which case has been remanded back to the United States District Court in the foregoing state to fix the amount of damages to be collected, will probably not be finally decided until next spring. Martin Lawler, secretary of the United Hatters and chief defendant in the suit, states that the costs that must be borne by the union will be between \$150,000 and \$200,000. Under the Sherman anti-trust law, which act was invoked against the hatters, the defendants are liable for threefold damages.

The plaintiff in the case—the Loewe Company of Danbury, Conn.—declared that its loss sustained by reason of boycott amounted to \$80,000, so that it is not improbable that the United Hatters' Union will be compelled to pay out in the neighborhood of \$400,000.

I have found perfect health and happiness upon a diet of nuts, fruits and soaked grains, with a few salad vegetables now and then. This means that setting the table and cleaning up is rather a diversion than a drudgery. As I have found it best to eat the skins of such fruits as apples, pears, grapes and tomatoes, I no longer need anyone to peel them and cut them up and make them into "dainty dishes" for me.

Can a child thrive upon such a diet? I can best answer the question by telling of our experience with my son David, aged five years. When we became interested in the new ideas of diet, we stopped giving him meat; but we lacked the courage to give up milk, eggs and white bread, and so he continued to suffer the ills which are generally regarded as the portion of childhood. This summer he was well and active, but was not gaining in weight as we thought he should. I had a friend with me who was living upon nuts and fruits, principally bananas, soaked prunes and fresh fruits, and I was trying it, and David became interested. He tried it for two months, and the result was startling. His tongue cleared, his breath became sweet, and the color simply leaped into his cheeks. The difference was noticed by everyone in two or three days, and for six weeks he gained in weight at the rate of an ounce a day—which is about four times as fast as a child's normal rate of growth. —From *Physical Culture* for October.

Banta & Co., Evansville, Ind., have moved to Terre Haute, closing the Evansville house.

Marriages.

August 16.—Dr. Fred B. Wheaton, West Somerville, Mass., and Miss Grace C. Emery of Biddeford, Maine.

August 18.—Dr. Edward Yackel, Tomah, Wis., and Miss Villa Cowles of Stephens Point.

August 19.—Dr. Fred W. Koehler, Peru, Ill., and Miss Nellie Barrett of Tonica, Ill.

August 23.—Dr. Arthur M. Furnish, Moberly, Mo., and Mrs. Frata Acuff of Burton, Mo.

September 6.—Dr. Henry D. Silvernale of Mukwonago, Wis., and Miss Beulah A. Thompson of Madison, Wis.

Fires.

August 11.—Office of Dr. A. H. Smith, Milton, Florida, destroyed.

August 13.—Dr. Campbell, Grovetown, Texas, loss \$250, fully protected.

August 23.—\$1,000 damage in the office of Dr. Sidney S. Jaffee, Washington, D. C. Loss not covered by insurance.

Listerine Tooth Powder

Tooth powders have long been empirically employed, chiefly as a mechanical agent for cleansing the teeth, and with little regard to their composition or chemical action. Many of the articles sold for this purpose contain ingredients prone to fermentative action in the mouth, such as orris root, starch, sugar, etc., and, in addition, pumice stone, cuttlefish bone, and other harmfully abrasive substances.

Listerine Tooth Powder, possessing neither of these objectionable qualities, very acceptably meets all the requirements of a frictionary dentifrice, and promises to give much satisfaction to those who employ it, in conjunction with a mouth-wash of Listerine, suitably diluted.

To dental practitioners of record, the manufacturers will be pleased to send a supply of samples of Listerine Tooth Powder for Distribution to patients.

Lambert Pharmacal Co.
Saint Louis

Deaths.

August 4.—Dr. C. H. Evans, Yarmouth, Me., aged 79 years.

August 4.—Dr. Arthur Barber, Orange, N. J., drowned in Lake George, aged 29 years.

August 10.—Dr. E. S. Hunter, Fayetteville, N. C., of heart failure, aged 72 years.

August 13.—Dr. Valette W. Leach of Keen, N. H., of bronchitis and heart failure, aged 76 years.

August 15.—Dr. Alvin S. Wrisley, Waterbury, Vt., aged 78 years.

August 19.—Dr. C. W. Moore, Brooklyn, N. Y., aged 60 years.

August 19.—Dr. Daniel B. Ingalls, of Clinton, Mass., aged 80 years.

August 20.—Dr. Frank L. Brannon, Pooler, Ga., of apoplexy, aged 28 years.

August 27.—Dr. Otto O. Lentz, Piqua, O., drowned in the Ohio river at Portsmouth.

August 27.—Dr. John R. Ramsden, Philadelphia, Pa., heart failure, aged 62 years.

August 28.—Dr. W. A. Leach, Newcomerstown, Ohio, heart failure.

August 31.—Dr. Thomas B. Robinson, Georgetown, Del., heart failure, aged 69 years.

August 11.—Dr. J. B. Curry, Cassville, Wis., at Mineral Point.

August 24.—Dr. Dave Clement, Big Creek, Ga., aged 35 years.

August 25.—Dr. A. L. Monroe, Flint, Mich., at Detroit.

August 25.—Dr. A. W. Day, Grand Rapids, Mich., aged 81 years.

August 26.—Dr. E. E. Whittaker, Tulare, Cal., aged 47 years.

The New York Dental School of the University of the State of New York, is now known as the College of Dental and Oral Surgery of New York. The new building to be especially erected for the purpose will be located at 302 to 306 East 35th street, opposite St. Gabriel's Park, and will be 78x100 feet.

The building will consist of four stories and basement. In the basement will be located modern heating and ventilating plants, a students' lounging room, steel lockers, toilets, laundry and drying room, and a large forge and metallurgy room.

On the main floor will be the general offices, faculty room, examination room, dean and registrar's offices. A large amphitheatre, with a seating capacity of 350, will occupy a good part of the floor. Other rooms will be a recitation room seating 150, and a students' study room.

The second floor will contain a large lecture room, the museum, professors' rooms, X-ray laboratory and developing

room, microscopical laboratories, as well as the special laboratories for histology, pathology, bacteriology and operative technic.

On the third floor will be located three large mechanical laboratories, one for each class, with a large and accessible plaster room. The chemical laboratory, extracting room, and a crown and bridge laboratory will be found on this floor.

The top floor will be devoted to the infirmary. The floor will be lighted by studio lights, and in order to accommodate the large number of patients, space will be provided for one hundred operating chairs. Part of the floor will be devoted to the William Carr Oral Surgery Operating Room, with adjoining anesthetic and preparation room. The John I. Hart Operative Dentistry Clinic Room and the lockers, attendants' rooms, and patients' retiring room will be easily accessible from the infirmary.

Every smoker who has ever tried to find a cigar that would please both himself and his friends knows the sort of task he is up against. There are as many tastes as there are men; the cigar that pleases and satisfies one man is objectionable to another. Many a good cigar has been condemned as worthless because it did not satisfy some individual taste. An advertisement of The Havana Cigar Co., Allentown, Pa., appears elsewhere. These people manufacture a long line of goods, varying in price from \$2.50 to \$15.00 per hundred, all of which are sold direct to the consumer, which means that the individual idiosyncracies of smokers are recognized and catered to. If you are a smoker, you are sure to find a cigar that meets both taste and pocket. Try a box. If not satisfactory, send them back and try another—keep on trying until you are satisfied. The trial costs nothing, as the manufacturers stand ready to refund your money at any time if they fail to satisfy you.

A component society of the Ohio State Dental Society was organized by the reputable and legally registered dentists of Hancock county at a large and enthusiastic meeting held, August 13.

Its officers are: President, Dr. J. H. Boger; first vice-president, Dr. E. C. Miller; second vice-president, Dr. A. E. Mann; recording secretary, Dr. J. D. Altenburg; corresponding secretary, Dr. J. E. Wickham; treasurer, Dr. C. E. Overholt.

The Ransom & Randolph Co. announces the opening on October first of a new and completely manned and equipped laboratory in connection with its Cleveland Branch House, 607 Rose Building.



CIGARS THAT SATISFY

FROM MAKER TO SMOKER

At Wholesale Factory Prices

We sell our cigars by the box direct to the smoker only - you do not pay any Salesman's, Jobber's or Retailer's profits here.

The advantages of our method are a decided gain in the quality and a marked saving in the prices. Every one of our cigars is a pure, relishable smoke of exquisite aroma and pleasant taste.

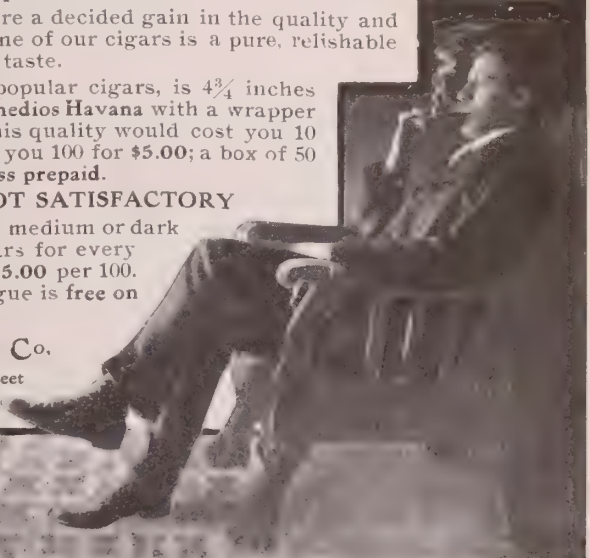
Our Royal Puritanos, one of our most popular cigars, is $4\frac{3}{4}$ inches long and made of Vuelta Abajo and Remedios Havana with a wrapper of fine Imported Sumatra. A cigar of this quality would cost you 10 cents at any retail store. We will send you 100 for \$5.00; a box of 50 for \$2.50, or a box of 25 for \$1.25, express prepaid.

YOUR MONEY BACK IF NOT SATISFACTORY

Kindly State whether you prefer light, medium or dark colors. We make cigars for every taste from \$2.00 to \$15.00 per 100. Our illustrated catalogue is free on request. Write for it.

The Havana Cigar Co.

1009 D. S., Green Street
ALLENTOWN PA.



Chicago, March 30, '09.

The Ransom & Randolph Co.

Having used STANDARD INVESTMENT COMPOUND for several months, after having tried all others, I consider the investment question settled so far as I am concerned.

In my hands it is far superior to all others, and such a thing as failure never occurs to me now.

The outlines of my inlays are perfectly defined, and they are cast so smoothly that I rarely touch the inner surface more than to cleanse it.

The fact that the Investment sets quickly; may be heated quickly, and that it may be heated to redness without danger of disintegration, are further points in its favor. It surely has the right combination.

Yours sincerely,

L. S. TENNEY

In a recent letter to Theodore Dreiser, Editor of *The Delineator*, a mother asked this question: "If I am compelled to send my children to school, how can I compel the school authorities to have a clean school and keep diseases out?"

It is a question that should bring every mother up standing, says the Editor, and we urge that before enrolling her children in school in September, every mother shall answer to her own satisfaction the following questions:

Have sufficient precautions been taken to prevent development of contagious diseases in the school? Are all children examined by a physician before being admitted? Are children with colds, coughs, sore throats, tuberculosis, pediculosis, scabies, sore eyes, etc., excluded? Has the schoolhouse been thoroughly cleaned, aired, warmed and disinfected? Is there a thermometer in each room, and are two opposite windows always raised? Is the room cleaned every day? Is dry cleaning permitted? Are individual towels and individual drinking-cups insisted upon? Has the plumbing been inspected; are the toilets kept in sanitary condition? Can every child read normal print at his desk without eyestrain? Are highly calendered text-books or shiny blackboards that strain the eyes permitted? Is too much "close range" work given to young children? Are the windows clean, or so clouded that they dim the light? Are the desks adjustable to the height of each child? Is there regular instruction in personal hygiene and in the sanitation of school and home? Do teachers receive such instruction? Do children have defects of eyesight, hearing, lungs, bones or teeth that make school work injurious? Are study periods too long? Are recess and recreation taken in the fresh air? Do all children have a substantial hot lunch? Is the walk to school longer than a child should take? Is too much home study given?

If you know that your subscription expires with the December number, send along your order for renewal now so that you may be sure not to miss a number. All subscriptions stop at expiration unless renewed. All we ask is your instructions to continue sending the magazine, as required by the postal authorities. You may send your remittance when convenient, or have your subscription charged in your merchandise account.

On August 18, thinking that he had killed, in the heat of passion, an innocent passerby, Dr. H. W. Keidel, a prominent dentist of Murray, Calloway county, Ky., turned his revolver upon himself and blew his brains out.

Work as a Cure.

Work cure is the best of all psychotherapy, in my opinion, writes Dr. Richard C. Cabot in *Good Housekeeping Magazine*. It is not the only thing to be advised in any case, and in some cases it plays but a little part, but in the vast majority it is a *sine qua non* for recovery. As well might we expect a patient to recover without food as to recover without work. Work makes people's stomachs, their bowels, their sensual organs, as well as their brains, perform their proper functions and keep their place. The sound man needs work to keep him sound, but the nervous invalid has an even greater need of work to draw him out of his isolation, to stop the miseries of doubt and self-scrutiny, to win back self-respect and the support of fellowship.

Around the World.

Dr. H. L. Ambler, Cleveland, leaves October 15 on a trip around the world.

The charter board of the Topeka (Kansas) Dental College met August 14 and organized its faculty and completed its union with the Washburn College Medical School.

It is the purpose of the school to maintain the standard set by the National association of Dental Faculties and the admission requirements are the same.

The names of dentists who were elected to fill the different chairs of the school and their titles follow:

Dean, Dr. R. C. Hutcheson; secretary, Dr. W. A. McCarter; professor of operative dentistry and oral surgery, R. C. Hutcheson, M. D., Ph. G., D. D. S.; prosthetic dentistry, John H. Solecki, D. D. S.; dental pathology and therapeutics, C. N. Mertz, D. D. S.; crown and bridge work, Garfield W. Weede, B. S., D. D. S.; orthodontia and dental and regional anatomy, W. A. McCarter, D. D. S.; dental chemistry and bacteriology, A. C. Sloan, D. D. S.; pyorrhea and prophylaxis, W. U. West, D. D. S.

All of the professors and demonstrators are practicing dentists in Topeka, except Dr. F. E. Corey and Dr. R. E. Roblyer. The former is from Council Grove and the latter from Paxico.

Dr. James J. Mills, Port Jervis, N. Y., has in his possession a dental mouth mirror of steel, concave and convex. It was used before the days of glass dental mirrors and is probably 75 years old. The steel is polished to the brightness of the present day mirrors and is a real curiosity. It was used by its former owner, who was both dentist and physician, in surgical operations.

Dentists of Birmingham, Ala., are exempt from jury duty.

A Perfect Finishing Disk

Saves Time and Money

A finishing disk is indispensable to the operative dentist and to be thoroughly efficient it must have great durability; this saves time in changing worn-out disks. It must also have fine cutting qualities to do the work satisfactorily. It must be flexible to suit the varying contours of the teeth or fillings and above all must be proof against moisture, which is the ruination of all paper disks and makes the use of the rubber dam necessary. HALL'S CARBORUNDUM RUBBER DISKS have all of these advantages and more, they are the only ones fulfilling all the requirements of a perfect disk.
BEING

Absolutely Waterproof

They can be used WET and are self cleansing. They can be sterilized and used several times. They are long wearing, the grit being firmly attached. They are very thin, very flexible and very rapid cutting. They cut on one side only thus saving the adjoining teeth from injury.

They are made in Four Sizes and Three Grits.

Price 40 cents per dozen.

Send for Catalogue. We make other meritorious articles.

The William R. Hall & Son Company

115 North 17th St., Philadelphia, Pa.

Another Warning.

Detectives are looking for two young men who, pretending to be patients, held up and robbed Dr. Joseph Abromaitis, a dentist of New York of \$13 in cash, a watch and chain valued at \$100 and a revolver valued at \$5. The men also compelled him to sign a check for \$300. Representing that some dental work was needed, one of the men seated himself in the operating chair. While Dr. Abromaitis was selecting his instruments the other man covered him with a revolver and his companion went through the victim's pockets. As soon as the men left Dr. Abromaitis attempted to summon the police by telephone, but found that the wires had been disconnected.

The men demanded that the check be made payable to the "Black Hundred" of the Russian Terrorists, and threatened the dentist with death if the check was not given them, declaring that his brother, Peter Abromaitis, of Mahoney City, Pa., would also be killed.

State Geologist, Prof. J. A. Bownocker, announces the completion of his new geological map of Ohio. The last map of this kind was published in 1888 and has long been out of print.

The new map shows in more detail the formations of the State. Thus the Carboniferous is divided into four parts while heretofore it has been in two; the Ordovician heretofore shown as a unit appears divided, and the Waverly is shown for the first time in Northwestern Ohio.

The glacial boundary is distinctly shown by a heavy line and the same is true of the old shore of glacial Lake Erie.

The base map has been carefully revised and shows townships, cities, towns, villages, streams, canals, railroads and traction lines. The work of the engraver has been unusually well done.

The map is on a scale of 8 miles to 1 inch and is about the size of the well known railroad map of the State. Price 25 cents, and stamps not accepted.

Send orders to J. A. Bownocker, State Geologist, Columbus, Ohio.

A well dressed man who visited offices of various dentists in Oklahoma City, Okla., September 2, and represented himself to be a member of the profession in distress, is being looked for by a number of dentists who loaned him sums ranging from \$10 to \$20.

The man said he wished to secure railroad fare to his home in Springfield, Mo., and that the money would be promptly returned. Later investigation proved that he had visited dozens of dentists. The police were notified.

More Important Than Eyes.

The pretty young teacher was struggling to impart spelling-book lore to a small Italian boy. "Chief" was the word under consideration. "C-h-e-f," spelled Tony laboriously. "Oh, now, Tony," she said, "you've left out one letter. Can't you think what it is?" Tony shook his shiny black head. "It's name is just the same as something you have," she went on, looking straight into his eyes. "I can see them looking at me this minute, right out of your head—two, big brown ones." "Bugs!" shouted Tony triumphantly.—*The Delinquent*.

Massachusetts Dental Society.

At the forty-fifth annual meeting of the Massachusetts Dental Society held at Boston, June 9, 10 and 11, 1909, the following officers were elected: President, Cornelius S. Hurlbut, Springfield; first vice-president, Eugene H. Smith, Boston; second vice-president, Carl Lindstrom, Boston; secretary, C. W. Rodgers, Dorchester; assistant secretary, Coleman Tousey, Boston; treasurer, Joseph T. Paul, Boston; editor, C. Edson Abbott, Franklin.

Place of meeting in June, 1910, Springfield, Mass.

It isn't often that one has the pleasure of meeting in a single day two such genial souls as Professors MaWhinney and Cook of Chicago. Both of these giants in the dental profession were very much in evidence at the Goshen convention—and the intimate meeting and interchange of good fellowship with these gentlemen is by no means the least of the good things missed by those who did not attend. The value of such meetings may possibly be better understood by the absentees when they are told that both these gentlemen declared that they had learned much from the papers read and the discussions that followed.

Dr. Fred S. Anderson of Richmond, Ind., has been named by Governor Marshall as a member of the state board of dental examiners. Dr. Anderson succeeds Dr. W. H. Shaffer of North Manchester. The appointment is good for two years.

Northern Indiana Dental Society at its recent meeting at Goshen elected officers as follows: J. A. Dinwiddie, Lowell, president; J. W. Stage, Goshen, vice-president; Clem Shidler, South Bend, secretary; Robert Gillis, Hammond, treasurer; J. A. Stoeckley, South Bend, superintendent of clinics.

South Bend was selected as the meeting place for 1910.

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To Correspondents: Send communications, exchanges, books for review, etc., intended for the Editor of Dental Summary, to Dr. L. P. Bethel, 1255 Neil Ave., Columbus, Ohio. Subscriptions and advertisements, send to the publishers.

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REGULAR CONTRIBUTIONS

MERITS AND SHORTCOMINGS OF SILICATE CEMENTS.*

By James H. Lindsley, D. D. S., Mason, Michigan.

IT IS the purpose of this paper to develop a discussion on the merits and shortcomings of the silicate cements. No doubt you have all heard the old adage, "Be not the first to accept the new nor the last to cast the old aside." Laboring under these conditions, after I had heard of the many good qualities of this filling material, I skeptically took it upon myself to try it; but previous to trying Ascher's Enamel, I was urged by one of our dental houses to try Translux and to my sorrow I did so, and consequently I did not take to Ascher's enamel as readily as some. As I had little call for porcelain fillings and knowing that I could never get just compensation for this kind of work in my town, I never put in a porcelain outfit; but as I never was a lover of gold fillings in the anterior teeth I was, of course, looking for a filling material of this kind; and, having a patient in my family who did not wish any gold work done on her anterior teeth, I decided to try it. That was about sixteen months ago; and, as these fillings are where I can keep close watch of them, and many of them were large step and contour fillings, I had but little faith in them, but up to the present time I fail to see any change in color, edge-strength and solubility. How

*Read before the Michigan Eighth District Dental Society, April, 1909.

much longer they will last I, of course, cannot say, but see no reason why they should not give service for many months and maybe years.

In selecting a suitable filling material, it must have certain inherent qualities,—edge-strength, adaptability, and proper inserting qualities. It should, when completed, if we are working for the aesthetic qualities, present a good appearance, being difficult to detect; and during my short use of this filling material I find that it contains them all. The filling material approaching nearest the texture and color of the natural teeth and also containing the aforesaid qualities is the ideal filling of the present twentieth century. And I truly believe that in Ascher's Artificial Enamel we have at least come very near to finding it. Of course, time only can tell.

I realize that at a meeting of this kind the majority of us are interested in that which will help us in our every-day practice; so the chemical constituents of this filling material you can look up for yourselves in your own private offices.

Now, let us look at a few of the things that are necessary to obtain any reasonable amount of success with this highly sensitive filling material. The first thing we should take into consideration is where and in what kind of cavities this should be inserted. Here our own judgments must come into play, I am not going to say where it should not be inserted, as so many dentists have inserted it in every kind of cavity and in all the thirty-two teeth and have said that it was giving satisfaction, I shall only give to you where and how I use it. It might be used if I had a class of patients who could well afford a good filling in every tooth—by this I mean some of our more expensive ones—I think I would use it in places where I now am using amalgam. I use it in all the upper anterior teeth and have used it in the same number of lower teeth. I do not use it in all kinds of cavities, although I have faith in it, that is, if it could be properly inserted. But owing to the different blends of color in the tooth itself, it is almost impossible to prepare a mix that will blend with the different shades in the tooth. But in three-fourths of the cavities of the teeth I have mentioned, they are rather small proximal cavities, where if gold pellets, gold inlay or porcelain inlays are used it requires a great amount of separation and pain to the patient. Besides we can save time if there is more than one filling to be inserted, and this is a great item to the dentist. I have had many and many a patient leave my office, saying that they would never have any other kind of filling put in. I have put in many a filling and asked the patient to *find* it, when they knew about where it was, and they could not do so. Can any of you who insert porcelain inlays say this?

I have put in fillings that included the whole proximal side of a tooth, from the cervical border to occlusal edge and within a speaking distance it was impossible to distinguish it.

I, of course, have had a few failures the same as any dentist here has had, with gold, porcelain, amalgam or any other filling material, but I have had only two patients for whom I have had to refill cavities that I

filled with Ascher's Artificial Enamel. One of these patients was a girl twelve years of age, a very nervous child. The fillings were situated in the mesial and distal approximal sides of the four lower central and lateral incisors. This little patient had very short teeth and a decidedly stiff lip with no control of it, and I found it impossible to properly keep a rubber dam on these teeth, but with cotton and the ejector, I inserted them. This was little over a year ago. She was in a few days ago to have her teeth looked over and I found that these fillings had not given satisfaction. They were nearly dissolved away. But I think the trouble was because I did not insert them under ideal conditions. I had to work very fast, and after they were in I did not feel satisfied, but trusted to luck.

Now, let me explain a few things that I think are necessary to obtain success with this filling material. The first and one of the most important things is to have the proper kind of instruments to work with. A large glass slab that is never used for anything else, a bone or agate spatula, and some good instruments to insert the filling material with. The Pinches Dental Co., who are the sole manufacturers of this filling material in this country make a set of agate instruments that are well suited for this kind of work. I made the most of mine. I bought a few bone crochet hooks and made just what I wanted, as so many of the bought ones are too large for the small cavities one has to fill. I might add here that a nice way to clean the slab and instrument is to immerse them in hot water. This makes them clean very easily. The next thing, provide yourself with a shade guide. They can be bought at any of the houses that handle Ascher's enamel. It is better to determine the colors you want to use before putting on the rubber dam, which should always be done, and always have a mix that you think will be just a trifle darker than the tooth. Cavity preparation must now be considered. Always prepare your cavities with some kind of retention form, and if possible, have the enamel walls parallel with the floor of the cavity, or in other words, the margin should be at right angles with the surface of the tooth. Do this so as to have as large an amount of the filling material as possible for edge strength, for it is not as strong as gold. After you have given the cavity its proper form dry it out with a little alcohol and a hot air syringe. Before making the mix have every instrument you intend to use ready on the bracket table, as it requires fast work after being mixed. Now, having selected your colors, and the cavity in proper form, let us proceed to mix. Always mix the colors dry as you can obtain a better blend. Quoting from an article in the DENTAL SUMMARY by Dr. Baldwin, of Chicago. "The New Method of Mixing Ascher's Artificial Enamel," "the spatula should be small in proportion to the mix. To obtain the best chemical body the chemist directs that the liquid be stirred before it is removed from the bottle to keep it as uniform in character as possible. About twice as much powder as liquid should be gradually but quickly stirred into the liquid

without any rubbing or grinding between slab and spatula. Small quantities of powder are then to be added almost continuously and but little mixing of the mass of each addition before adding more powder until the required consistency is reached. The entire mixing process being that of stirring and mixing with frequent removals from spatula and slab, turning, patting, and pressing so as to work the dry powder into the moist mass obtaining about the necessary chemical action."

INSERTING FILLING.

As you arranged every thing necessary to fill with before mixing, pick up a small piece and place it in the floor of the cavity and with the proper instrument force it up into all the undercuts, now pack in some more. If it is necessary to use a matrix to pack against, use a celluloid strip and as soon as you have packed in the necessary amount to make a good filling with a little excess, take hold of the strip and with a drawing motion toward the edges remove it, then put a very little vaseline on the strip and with your agate, bone or tortoise instrument burnish and trim away the excess until you have a highly polished filling. Sometimes it is necessary to use a fine cuttle fish strip and disks to properly finish it. I have often used some of my smooth Amalgam burnishers to burnish with, and I have never noticed any discoloration yet, although the manufacturers claim it will do so. If the operator has carried out all the proper technic of the work he will now have a filling that will be hard to locate. The fillings should now be allowed to stand from fifteen to twenty minutes before removing the rubber dam, and it may be well to coat over with paraffin, but not too hot. This can be left on after the dam is removed to keep away the moisture, as water will spoil it if it is not properly set.

This filling material can be used in many other places, such as repairing gold fillings. Many times it is possible to repair a gold filling so that it will not show at all, which saves a large amount of work for the operator and a tiresome operation for the patient. Some dentists have used it to repair porcelain bridges, others to repair gold crowns and for all kinds of repair work. In all of my work I have told my patients that if at any time they were not satisfied with it to come back and I would replace it with gold and have never had but one patient do this, and this was a young man who was partial to gold fillings.

In conclusion, let me prophesy. If Ascher's Artificial Enamel will stand the test that its manufacturers claim for it, and what many other dentists are claiming for it, we then have found an ideal filling material, one that in nine-tenths of the cases where we are now using gold and porcelain filling will replace those materials.

SILICIOUS CEMENT*

By W. V. B. Ames, D. D. S., Chicago, Illinois

I AM compelled to come to you tonight with a sort of apology, inasmuch as the discussion requested of me happens to be of such a live and vital character at this time that it has become more or less necessary for me, on two or three occasions within the year to take part in discussions on this particular subject, so that in the April issue of the *Dental Cosmos* appears considerable matter which I intended to bring to you.

Last November I was asked to take part in discussing this subject before the New York Odontological Society, and if I had anything worth saying down there I had to say much of what I bring you tonight, except I can say that the real vital part and valuable part of what I bring to you tonight I was not able to give at that time and have not been able to give at any time previous, it being the result of some experiments I have been carrying on to ascertain the reasons for some of the shortcomings and vital defects of the so-called Silica cements. Of these shortcomings we shall have something to say as we go along.

Probably some of you recall attempts at making a paste to take the place of the cement liquid. One you may remember the Samil Hussy paste acid, which passed into oblivion in a short time, the same as the Fletcher paste and other similar attempts. It is quite possible that Fletcher's materials were faulty because of the attempt to use this paste instead of the acid solution.

For fear that there is a rather general impression that the so-called silicate cements differ wholly and totally from the phosphate cements, I want to begin with the statement that the silicious cements of today are all oxyphosphates just as much as are the zinc cements with which you are familiar, the silicious variety being oxyphosphates of calcium modified by silica, and alumina in all cases, and other substances as the manufacturer is moved.

It will probably be of some interest to review the known attempts at the production of this kind of a phosphate. An early record of a tooth plugging and pulp capping material is the patent of Wm. H. Rollins, of Boston, Mass., application on which was made March 28th, 1879. This was not an oxyphosphate but more of a hydraulic cement of the Portland variety, in which the setting depended on treating a mixture of calcium oxid and silicates with water, the water for the Rollins material containing some gelatinous silica. I mention this because this material has been cited as an early example of silicious phosphate.

The earliest record of a *real oxyphosphate* of the silicious calcium variety that I have been able to obtain, is the patent of Thos. Fletcher, of Warrington, England, application on which was filed July 29, 1879. This specification calls for an acid solution of phosphate of tin which will react

*Read before the Michigan First District Dental Society, May 8, 1909.

with a compound prepared by fusing together lime, silica and alumina. I am of the belief that the Fletcher preparation failed of marked success partly because of the instability of the acid solution of phosphate of tin. Another Fletcher patent of the same year calls for an acid paste containing aluminum phosphate. The history of such *acid pastes* for dental cements indicates negative value.

Some ten years later an oxyphosphate of the silicious calcium variety began to be shown by Dr. McGeorge, of Corning, N. Y., and was later put upon the market by The S. S. White Co., as "Dentos." A few years after this "Archite" appeared through Lee S. Smith & Son, this also being of the silicious calcium variety. With these two efforts, the principal fault appeared to be the inevitable shrinkage taking place in a mass during the setting process, and in the early material produced by Steenbock, of Berlin, under the name Ascher enamel, this fault was evident to a fatal degree. This Steenbock material is a silicious calcium oxyphosphate, said to be radically improved over any other possible material, because of a beryllium silicate ingredient. Since this many similar preparations have appeared including Astral, Harvardid, Smaltid, Hoffmans Enamel, Lorenz Silikat, Schoenbecks Silicate and some others.

On February 12, 1906, an application for patent was filed in the United States by Josef Rawitzer, of Charlottenberg, Germany, and patent granted same year. In this specification, the material being that known as Astral, Rawitzer says that a superior cement with reference to brittleness and shrinkage can be made by adding aluminum silicate prepared in a wet way to molten silicate of lime and aluminum, and it is on this preparation of aluminum silicate in a wet way, that the U. S. patent office granted letters patent, which seems a joke to the layman, as the wet way had no doubt been the natural way of preparing aluminum silicate in the making of previous similar preparations.

In the specifications for the patents of Steenbock issued in 1904, some extravagant claims are made for beryllium silicate as the distinguishing ingredient of his cement, and in advertising matter appearing from time to time, it is claimed that because of this ingredient, his cement "stands as the only absolutely perfect filling material." It is not for me to pass on the value of the different silicious calcium oxyphosphates, but I feel safe in giving some working suggestions, which I believe can be followed to advantage with all materials of this class.

While I know that too extravagant statements have been made by manufacturers, which do not enhance the dignity of even a commercial pursuit, I am of the opinion that, while the perfect product is far from a reality, such advances have been made since Fletcher's first attempt, that the prospects are encouraging. The advance toward reliable materials has been particularly rapid during the past two years or since Steenbock brought out his improved Ascher Enamel which I consider is a marked approach to the ideal material wished for. The makers have brought out their improved,

and their comparatively and superlatively improved editions of their original attempts. With the variety of shortcomings, among which we may mention lack of adhesion, shrinkage, and brittleness (causing chipping at edges) and a tendency with some materials to discolor badly in the mouth, I predict that this generation will not see all of the improvements in this particular field. I can predict this with plenty of courage of conviction knowing that the ramifications of possible formulae are multitudinous. The alloy question it has been said, is a Sunday picnic compared with that of oxyphosphate of zinc and I can easily say that the same comparison might be made between the zinc phosphate situation and that of producing a high grade silicious cement.

The latest patent on anything of this kind granted to W. V.-B. Ames, a fluid silicate and phosphate.

It happens that I am able to produce a material which shows some adhesion, is free of shrinkage, so that in its use undercuts are not called for, has a fair degree of translucency, does not discolor in even an unclean mouth, will withstand severe abrasion and acid and alkaline tests and has some desirable working qualities, and yet I probably have only scratched the surface of the possible field, and would be very loathe to say that any one today has produced the perfect material.

Cavity preparation, where the use of cement is justified, should be, I believe, a very radical departure from the extension for preventive method, which has become gospel with the successful gold workers of today. For gold fillings and for gold and porcelain inlays, enamel margins have properly been cut back very freely. For best results with a Silicious calcium oxyphosphate, I am ready to lay down a rule that any bit of enamel that does not render impossible the proper cleansing of the cavity and that does not render the cavity margin too grotesque, should be retained. With an equipment of excavators such as Darby Perry 1-2-3-9-10, the Gillett 4-5-6-7, Battle Ax 1-2-3-4-5-6, and others calculated to remove caries from inaccessible locations, proper cavity preparations is fairly simple after separation for approximal cavities, with the *retention* of enamel, which would be cut away for operations with some other materials. In making these statements we have approximal cavities of incisors mostly in mind.

In treating cavities in bicuspsids or molars, reaching to the oclusal surface, if enamel can be retained which will give cavity edges removed from direct occlusion, and give an acute instead of an obtuse edge of enamel against which to finish the cement, the prospects are much lessened of having an objectionable angular annoyance presented to the tongue from *slight* wear of the cement.

In connection with the making of silicious cement fillings, I want to call attention to the value of oxychlorid of zinc as a cavity lining and as a pulp protection. Silicious cements are excellent conductors of thermal changes, so that a proper non-conductor will be often called for, and very often an intermediate layer having germicidal properties will be indicated.

A silicious cement cannot be counted on for even the sterilizing properties of oxyphosphate of zinc because of its inert ingredients and because the compound is not acted upon by the reagents present in the mouth. I think that oxychlorid of zinc fulfills the requirements more thoroughly and with fewer objections than any material available. It can be prepared to set quickly, especially with the application of heat. It is likely to be irritating temporarily, but can be used, I believe, over any pulp which is fit to be retained, with in rare cases a coating of some bland material directly over an almost direct exposure. I wish to especially emphasize the fact that silicious cements are prime conductors of thermal changes, if they have the desired texture.

Oxychloride of zinc should be mixed to a hard consistency to secure prompt setting.

Silicious cements should be manipulated with non-corrosive instruments. An agate spatula, I consider the only proper instrument for the mixing process. Bone or ivory are so rapidly abraded, that for that reason their use is contraindicated, finely comminuted bone not being a valuable addition to a cement mass. A slab with a slightly etched surface, I have found an advantage, as with a perfectly smooth slab, the mass as it acquires some stiffness, is apt to slide to an objectionable extent.

Some of the silicious cements are so susceptible to a hastening of setting from a rise of temperature, that a decided advantage obtains from working upon a chilled slab. A cement which would be objectionably quick setting when mixed on a slab of room temperature will admit of the incorporation of more powder and be rather slow of setting when mixed on a chilled slab.

I wish at this point to repeat what may be found in the May *Cosmos* regarding the mixing of these materials. There has been offered much faulty instruction as to manipulation. I do not believe that a rational process for mixing and using has yet been described, and I am sure that many fillings have been ruined by following the instructions calling for the manipulation and disturbance of the cement mass during the setting process, this disturbance being carried out by means of vaseline coated burnishers. This process, I think, has been abandoned to a considerable extent because a great many fillings were ruined by the process.

By stopping to think of what would be the result of so interfering with the crystallization process, it is easy to see that it has been faulty instruction in the face of our knowledge of such processes in general. We do not know too much about crystallization, but we do know that the process of crystallization should not be disturbed after it begins to take place. I am sure that this material should be mixed according to the common knowledge possessed in mixing other materials thoroughly to a point from which it might be expected you would get the maximum of strength and then after it has been placed accurately in the cavity and given proper form, by the application of heat, and without further disturbing, the setting should be

hastened and caused to take place in as short a time as possible consistent with the comfort of the patient. The mass, after it has hardened, should be finished as much as may be desired and with considerable care. There is usually some finishing necessary. There will be obtained by this process a cement mass of an integrity superior to that secured by following any set of instructions before offered in connection with any marketed product, and without securing the usual shortcomings. Where 15, 20, or 30 minutes is advised in the insertion and treatment of these fillings, by the process of burnishing with vaseline burnishers, I think with any materials one-third to one-sixth of this time will be sufficient for proper crystallization if heat be applied by any advantageous scheme, such as projecting by hot air, or the application of hot paraffine on the surface. This heat may be applied directly to the cement mass, in the angles of large restoration of bicusps and molars, or any other cases, the mass being condensed beneath celluloid. The celluloid should be removed as soon as the cement will permit without distortion of the filling, but the heat may be applied while the celluloid strips are still in place. I think both vaseline and cocoa-butter are abominations used in connection with these materials, and that the mass of cement burnished with vaseline burnishers looks better on dismissal after that treatment than it ever does again after the grease disappears from the surface. A substitute for the vaseline is paraffine, such as I often choose in using heat to harden cement. A strip of sand paper, or emery strip drawn across a lump of paraffine puts it in ideal condition, or rotating a disc on a lump of paraffine does the same work. Paraffine is primarily used as a means of transmitting heat to the mass to hasten its setting. In observing the effect upon pellets, not used for fillings, of this molten paraffine, it seemed evident that there was some chemical action between paraffine in the molten condition and free phosphoric acid. Recently I made the experiment of heating together paraffine and phosphoric acid and there is no doubt that the temperature required for melting the paraffine produced a slight chemical combination. I think that the free phosphoric acid on the surface of the cement mass can be neutralized by the paraffine at that temperature, so that I do not hesitate in saying that I firmly believe that in addition to hastening the setting there is a neutralization by the heated paraffine of the slight amount of free phosphoric acid resulting from what may be present with a proper mix.

I think that the cement can usually be inserted into the cavity with steel instruments without serious damage, as with cement of proper plasticity there would not be an abrasion of the metal although I would consider an absolute result worth the expenditure necessary to procure non-corrosive points of proper shapes. For the filling of small approximal cavities some delicate instruments are called for which cannot be formed from agate or even bone or tortoise shell. Such may be formed from iridio platinum and set into steel shanks. A practical make shift is the coating of steel instruments with celluloid or cellulose, by dipping the instrument into a

solution of a good collodion and allowing the pelicle to harden before use. By cleaning the instruments while the cement is quite fresh, a good coating of a good liquid court plaster such as that called "New Skin" might be equal to many operations. For burnishing surfaces for moulding to form, or for finish, agate is ideal, but in a majority of cases with approximal cavities of anterior teeth representing the majority, I would say the cement may be finally manipulated by steel burnishers with thin celluloid interposed between burnisher and cement. These strips are furnished and are no doubt familiar. Ash & Sons, while not successful with Astral, did furnish good appliances for its use. Vaseline, I think an abomination as an adjunct to the making of silicious cement fillings. The only excuse for vaseline known to me is that by its use a filling may be burnished to present a better appearance than it ever will after the grease disappears. Paraffine I find much more satisfactory for the lubrication of discs and strips than vaseline, cocoa-butter or any such material previously recommended. It may be employed by drawing the strip or revolving the disc upon a lump of paraffine. I still believe the mere end thrust of a steel instrument will not cause much harm in the way of discoloration.

The setting of some of these cements can be decidedly accelerated by a rise of temperature, without detracting from the integrity. After a cavity is properly full of properly condensed cement, heat may be applied as hot air, or hot paraffine, with the result of very quick setting. If the cement has been moulded beneath thin celluloid, the heat may be applied upon the celluloid, the strip being easily removed in a short time (probably about one minute) without distorting the cement surface, and without the need of vaseline coating, although the merest film would not be objectionable. After finishing the hardened cement to the edges by cutting with knives, burs, strips or discs, a coating of paraffine is an advisable precaution against saliva for a few hours. As finished after this plan, I consider that the mass has crystallized to the extent of 90 per cent or 99 per cent, the paraffine coating being advisable however as a protection, during the final slight changes which probably progress for several hours. I feel safe in saying that with some cements where it is advised to wait thirty minutes or more for the hardening, a better result might be obtained by very much curtailing the time, as I have found the hot paraffine scheme an apparent advantage with materials with which a long wait and no heat was directed. A chilled mixing slab will quite generally be found advantageous from retarding the setting thus enabling the admixture of a greater amount of powder and more thorough spatulation. That disturbances of the cement after crystallization has progressed to a decided extent are wrong, needs no argument. Instructions furnished with some silicious cements calling for this sort of procedure have been the cause of many inferior results.

Actual and decided undercuts are not needed as generally as some instructions seem to indicate. Some silicious cements as prepared during their early history did not need these undercuts because of their shrinkage proclivities for which reason there was no sane reason for their use.

As made at present these same cements will not shrink when properly handled, therefore only good cavity form is called for. Since there is so little adhesion with some makes, at least parallel walls are needed, while if it is found that some preparations show some adhesion, then only fair cavity for will be needed as with any other adhesive cement. As to results, I have seen some sufficiently creditable to encourage one to proceed cautiously. I feel warranted in saying that the time has passed for cutting back radically the enamel margins about a small approximal cavity for the insertion of a porcelain inlay, and for the management of labial and buccal cavities, these cements when free of the tendency to shrinkage and discoloration, are almost ideal.

When I prepared this paper I did not fully realize to what extent the trouble of discoloration was attributable. I knew that it did happen and with some makes of cement much more than with others. Until recently, I had been inclined to think that the fault was with the dentists using it. I supposed that it probably came from the use of steel instruments to too great an extent, and possibly it was at the time that the Ascher enamel people were advocating the use of vaseline, for by and by they said, don't use vaseline, because that is the cause of the discoloration.

It has been my lot to hear a great many expressions about these materials, and no cases where fillings were the same as they were inserted. They were often matches to the teeth in which they were placed, and were satisfactory for a time, and then they began to change color and would need to be removed. It has been strongly urged in the use of these materials that the original surface be retained to as great an extent as possible, and it was for that reason that the early instructions called for the moulding of the material while it was setting, endeavoring to leave the cavity just full and needing no finishing, all of which did not convey any strong impression to me until in some recent tests I found that where I had previously tested cements dropping masses just as they had been moulded into a staining solution, the solution being composed of potassium sulphide, ammonia and sulphide, answering the same purpose, I was under the impression that the staining we hear of was not inherent in the material or not a necessary result, because those pellets would stay so clean in the solution, if the ordinary tentative discoloring of the mouth was discoloring these. I happened to find, in the course of time, with the least abrasion, such abrasive spots would immediately take on a stain, and that stain would rapidly permeate the mass, so that threw some light on this discoloring after they had been in place for a time. It indicated that as soon as they lost their original surface the stain penetrated much more rapidly. The surface is always a little different than the material beneath. One reason for it is that the free acid tends to come to the surface, and so there is an excess of crystallization. That would account for the surface difference, but I do not pretend to say here why in any particular cements that there is always a case hardening of a certain protection, but

the fact remains that as soon as the surface is broken the stain rapidly increases. Now in addition to that I found in testing our various colors that there was a difference in the different colors and the extent of their discoloration. I found uniformly that the plain white enamel would stain less than the pigmented materials, and that some of the colors stained worse than the others. The Ascher material, for instance: the No. 6 is the plain white, and I have made a test, say of the various colors, and you can see it as I pass these specimens about. There are five shades here, although I have tested more shades. Nos. 1 and 7 stained very badly, and became in spots and the thin edges became as soft as so much charcoal almost, from the effects of the sulphide solution. Nos. 1 and 7 staining badly, and Nos. 4 and 5 not so badly, Nos. 2 and 3 being intermediate. While it may be said that the strong solution of sulphide of potassium is not a fair test, I do not think it can reasonably be said that it is not a fair test. While it is extreme, it is, I verily believe, just an indication of what can take place in the mouth, and what does take place in the mouth to a lesser degree, and all this indicates to me that certain colors of these cements are ruined in the pigmenting process; they are rendered liable to the sulphuretting, and the pigmenting material aids the destruction to pass to the center of the mass. In testing different cements I found a difference in the form of the stain between, say, the Ascher material and some others not so well known. There is the Schonbeck, which is a material at present probably more used in Germany and England than the Ascher, and it is probably coming into use, because with it, while there is sometimes a tendency to stain and the same rule holds with the pigmenting the colors, the greys, yellows and blues stain more readily and more extensively than the plain white: it seems that it is more of a surface discoloration and that it is a sulphide which is soluble instead of being insoluble and tending to go deep into the mass. Now what will be the actual result of the test of time: all this remains to be seen, but in that respect it is promising that this stain does not go to the same depth, does not permeate the entire mass, and it seems that while there is a tendency with the colors to form sulphides, there seem to be soluble sulphide and the soluble sulphide, while it might color under some conditions, would disappear and you would not know it has been formed.

DR. DUMAS. How old are these fillings?

DR. AMES. Ordinarily I have these staining as soon as they seem to be sufficiently set. By means of heat I can cause any of these cements to be crystallized, to be submitted to water in solution in 10 or 15 minutes' time, and then they are left for 24 hours in the stain, and then, with the Ascher material, after taking them out of the stain and placing them in plain water the stain seems to progress. I believe that in one case it is an insoluble sulphide which tends to creep and continue, and when the other case, it is a soluble sulphide, which, in the mouth, would never be

noticed because in this case it forms because it is in the sulphide potassium, a solution furnishing sulphide of hydrogen, and in the other case it is dissolved away as soon as it is formed. The fact remains that with the identical treatment with these cements, and all of them the unpigmented material stains less than the pigmented, and with one cement the stain seems to be soluble in water, in sulphide, in the other case it is insoluble, and then, of course, is a permanent stain.

SILICATE CEMENTS

QUESTIONS AND ANSWERS

SILICATE cements have now been used long enough to test their value as tooth saving materials, and in order to obtain data as to their present standing, THE DENTAL SUMMARY sent the following list of questions to a number of prominent dentists and their replies are published herewith:

QUESTIONS ASKED:

1. How long have you been using Silicate Cements?
 2. Do you consider them permanent?
 3. What has been the cause of any failures you may have had with them?
 4. Have you noticed wall leakage about the fillings after they have been in for some time?
 5. Do you use oxychlorid or oxyphosphate of zinc as a cavity lining under the fillings?
 6. Have you examined those fillings which have been in for some time to determine edge and surface conditions? With what result?
 7. Are you successful in immediate contour restoration? If so, how do you do it? If not, how do you arrive at satisfactory surface finish?
 8. In about what per cent. of fillings do you get discoloration?
 9. What is your method:
 - (a) Of cavity preparation?
 - (b) Of manipulation of the material?
 - (c) Of finishing the filling?
- Any additional information will be appreciated.

REPLIES:

DR. J. R. CALLAHAN, CINCINNATI, OHIO

I have been using silicate cements in an experimental way since they were first put on the market.

Those fillings that were put in soon after the introduction of these cements did not last long; were usually dissolved away in a year. The fillings put in within the present year seem to be doing much better, on account, I think, of more careful mixing of liquid and powder.

I have no recollection of seeing a recurrent decay about these fillings, which would indicate little or no leakage. The cavity walls should be protected by cement or varnish lining in the same proportion as for gold fillings. As to edge strength, the silicate cement has the least of any filling material. Feather edges break off easily and promptly, the only remedy being to smooth the edges down to enamel lines perfectly.

My own fillings have not shown discoloration, to my knowledge, due, I suppose to the fact that metal is not permitted to come in contact with the cement at any stage of the operation, every instrument, slab and bottle are kept scrupulously clean, by a rather elaborate use of clean napkins and alcohol.

Cavities should be prepared for retention as for gold fillings, and borders as for porcelain inlays.

The cement powder is incorporated with the liquid on a *cold* slab, by tapping or patting up to the time that the mixture becomes quite stiff, then rubbed to get a workable mass, then packed into the thoroughly dried cavity, with bone, agate, ivory, tortoise shell or wood instruments, in about the same manner that we manipulate dry amalgam, except that after the cavity is slightly over-full the cement is burnished under a thin celluloid strip, then allowed to stand thirty minutes to harden, sometimes hastening setting with warm air. Then finished with fine disk and tape that has been drawn over a cake of pure paraffine.

These fillings are by far the most attractive in appearance that we have ever used. But I do not consider them safe practice unless the patient understands that they are expensive and will have to be renewed from time to time.

DR. J. P. ROOT, KANSAS CITY, MO.

1. I used them one year, ceased their use eight months ago.
2. I do not, except in a very limited degree.
3. Nearly all failures were apparently due to discoloration, and dissolution resulting from chemical action of fluids of the mouth.
4. Yes.
5. Always, as I do in every class of filling.
6. Yes, to my sorrow; disastrous.
7. No. Have never been able to insert a filling where final finishing and polishing was not necessary. This was accomplished mostly with cuttlefish disks.
8. Cannot tell exactly per cent. of discolorations, but it is too large to justify me in continuing its use.
9. (a) Cavity preparation about same as for gold, except beveling of margins, and location of points or grooves for retentions. These not necessary at any definite point, merely have cavity of self-retaining shape.
(b) Have manipulated the cements in every known and unknown manner.
(c) Answered in No. 7.

DR. JOSEPH HEAD, PHILADELPHIA, PA.

I will do everything I can to answer your questions, but my experience with silicate cements has been so poor that I have found them of little value except as a temporary filling. It is true that sometimes they last well, but so did Archite. Ordinarily, I should say seventy-five per cent. of them turn black, and those that do not turn black show contraction to such an extent that the filling rocks and hurts the patient when the filling is bitten upon.

I have heard of some who squeeze the silicate cement in upon oxy-phosphate of zinc but I do not know whether this would be satisfactory. Theoretically, it would make a tight seal with the tooth structure but what the chemical effect would be I am unable to say.

I still believe that silicate cements are not in a position to supersede porcelain.

I invariably prepare my cavities so that the silicate cement will be devoid of thin, beveled edges. I manipulate the material by working a little of the powder in a drop or two of the fluid until a good paste has been formed and then working in some more powder until the cement has become doughy.

I have been given so many different methods for mixing Ascher's Artificial Enamel, which I consider by all odds the best that has yet been given to us, that I am tempted to believe that its inventor is not sure of himself concerning it.

DR. H. B. TILESTON, LOUISVILLE, KENTUCKY

Replying to your list of questions anent my experience in the use of silicate cements, I will take them up in the order in which you ask them, and will make my answers brief, as you will doubtless have many replies to tax the space you can give to this subject.

1. I have been using silicate cements for four or five years, and, (2) as to their solubility in the oral fluids, I consider them permanent. 3. My failures have been due to one or more of several causes, the fault lying chiefly, if not altogether, with myself, and not with the material, except when using a make that in itself was a failure. Improper mixing of the cement, faulty manipulation in adapting it to the cavity, allowing to get wet too soon, lack of judgment in applying it to cases in which, from the nature of the material, it could not help but fail, improper cavity preparation, have all contributed more or less to such failures as I have had.

4. I have observed some discoloration under the labial enamel plate in incisors, which seemed to indicate wall leakage, but which might be due to imperfect adaptation of the cement to the under surface of the enamel, or to some carious matter left there, or possibly to some stain left from a previous leaky metallic filling. I am not satisfied that it is due to shrinkage of the cement mass.

5. In deep cavities I generally use some material, sometimes oxy-phosphate, as a protection to the pulp just as I would under any metallic

filling. I have not observed any tendency in pulps to die under silicate fillings except where the death of the pulp could be attributed to some cause other than the possible presence of arsenic or other devitalizing element in the silicate cement.

I have sometimes resorted to the expedient of placing a silicate filling over a thin layer of soft oxyphosphate of zinc to aid in its retention where, for any reason, the cavity could not be given a proper retention form. This procedure calls for great care to keep the oxyphosphate cement well within the margins.

6. Examination of silicate fillings that have been in for a year or more, does not reveal a condition entirely satisfactory as to margins exposed to any kind of stress, but I have observed no tendency towards disintegration such as is common to oxyphosphates, and even where the margins are imperfect, there is a notable absence of recurrent caries. Silicate fillings do not retain a surface such as glazed porcelain does.

7. I don't quite understand what is meant by "immediate contour restoration." Possibly it refers to an immediate surface finish without subsequent dressing down and polishing. I have not succeeded in doing that with any degree of satisfaction. By hard burnishing with a steel instrument over the celluloid strip and repeatedly cutting off the thin lamina which spreads over the enamel surface and reburnishing, a very beautiful effect can be produced, but owing to the translucency of the silicate cement, a very thin lamina which is invisible is almost invariably left overlapping the margin. This subsequently chips off and leaves the filling surface standing slightly above the cavity margin, which may account for the appearance of bad margins later on and give the impression that the cement has expanded. Corner contour restorations exposed to stress do not stand well, as this material is too friable to withstand incising or masticating forces.

8. Translux, which has been abandoned by the manufacturer, and which I used for a while, discolored in almost every instance. The material I am using now, and which I have used since I first began using any silicate cement, except during the brief time I was experimenting with Translux, does not, so far as I can see, discolor at all, except when contaminated by some foreign substance. In a downtown office in a dirty city, especially in winter time when soft coal is filling the atmosphere with soot, it is easy to understand the difficulty of making a perfectly clean mix even with the greatest of care, and I am confident that the few discolorations I have had are traceable to some such foreign contamination.

9 (*a*) Without going into unnecessary details of technique in cavity preparation, I should say that the three essentials are:

1. A perfectly clean cavity.
2. Smooth, square cut (not bevel) margins.
3. A retentive form.

(b) For mixing I use a heavy glass slab with a fine ground or frosted surface and an agate spatula, all scrupulously clean. I draw a little of the powder at a time into the drop of liquid, patting and stirring it lightly and adding more powder as rapidly as it can be taken up by the liquid until I think I have added enough and then spatulate thoroughly, adding more powder if needed. The mix should be too thick to flow from the spatula when held suspended upon it, much too thick for that, yet perfectly plastic and having no tendency to granulate. The rubber should be in place always and the cavity dried with alcohol and warm air and the celluloid strip, with just a trace of cocoa butter smeared on it, either in place or ready at hand. The cement is carried to the cavity with an agate, glass or tortoise shell point small enough to enter the opening through which the material is to be introduced, and packed thoroughly into the cavity until full, when the celluloid strip is drawn over upon it and held firmly, while with a steel flat burnisher the mass is compressed and ironed over the margins with all the force it is safe to employ. The celluloid strip is turned back and the overlapping lamina of cement trimmed off, then reburnished through the strip as described above. The mixing, placing and burnishing should all be done as rapidly as possible, after which the cement is left undisturbed for several minutes, or until crystallized, before attempting further finishing.

(c) As soon as the material has "set," if there is much excess, I shave it off carefully with a steel triangular chisel on exposed surfaces and use a fine white sand strip in the inter-proximal space for removal of excess and finish and polish with fine linen cuttlefish strips and disks. A further polish may be given by using some of the silicate powder on a worn strip. The filling must be kept dry for fifteen or twenty minutes, when it may be further protected by melting paraffine upon its surface. While silicate cement is known to be not so adhesive as it appears to be, yet I have on several occasions set porcelain inlays with it as an experiment, and after several years they are doing perfectly well. Because of its translucency it has a vastly better effect under porcelain and about the margins than opaque oxyphosphate of zinc.

In conclusion I should like to add that while silicate cement is vastly superior to any cement we have ever had, it is yet far from being the ideal filling material we have so long been in search of. And again, the fact that we occasionally, by accident, achieve an almost if not quite perfectly ideal result, just as, now and again, by accident also, we have had surprisingly good results in the use of oxyphosphate of zinc, proves that our technique in manipulating cements is by no means reduced to a positive science. There is yet much to learn.

DR. J. D. PATTERSON, KANSAS CITY, MO.

Your inquiry about silicate cements received.

It is a filling I have not touched for about seven months. Am very sorry I ever did touch it.

I tabulated all of the silicates which I inserted—using the methods of those who claimed its success—with great care, and after three years found that the per cent. of failures was so great that it will ruin any one's practice if he sticks to it. It shrinks badly and leaks. It discolors and chips; and after about two years only about 10 per cent. of the fillings are passably good.

DR. McFARRAN CROW, LEXINGTON, KY.

I have received your letter and list of questions on silicate cements. I am not in position to answer these questions, for my experience with silicate cement is limited to less than a dozen cavities.

I used an American make and the discoloration was so great that I had to remove most of them, and abandoned the use of the cement. That was about two years ago. I shall await with much interest the result of your inquiry.

My opinion now is that all the plastic filling materials are treacherous and uncertain tooth savers, and their field of usefulness is very limited.

The question opens up an avenue for considerable discussion and I must close before I get in too deep.

DR. CHAS. E. WOODBURY, COUNCIL BLUFFS, IOWA.

Answering your letter of July 28th will say that I began using silicate cement in June, 1906, the first fillings being made from a sample package sent out by the manufacturers. Most of the fillings made at that time which I have been able to keep under observation are doing well, and show no signs of either disintegration or discoloration at the margins. Some of the early fillings got chalky on the surface and I had a great deal of trouble in keeping the cement from getting muddy during the mixing. All of these troubles I found were due to faulty technique and have since been eliminated.

I am conservative in its use, limiting it to cavities in the labial and buccal surfaces and to the proximal surfaces of the front teeth where the angle is not involved. In these locations if the proper technique is observed in its manipulation I consider it a permanent filling. My troubles have all come from not following the directions to the smallest detail both in regard to care of the material and instruments when making fillings. Failure to stir the liquid, a slight uncleanness of the mixing glass or instruments, use of too much vaseline, improper mixing and incorrect line of force when making the filling are a few of the causes of failures.

I have had a very few fillings that showed leakage at the margins and I am satisfied that this came from either too much vaseline or from working the material away from the margin when getting it into form. I have never used oxyphosphate of zinc as a lining except where the cavity was deep and I wished to protect the pulp from thermal changes.

The margins and surfaces of the fillings are both invariably good where they have not been subjected to stress, and the proper technique has been employed.

Immediate separation may be obtained by means of mechanical separators, but I find that they very much interfere with the rapid work necessary and I prefer separation previous to the time of making the filling.

Of my early fillings about five per cent. showed discoloration or a chalky surface. Not over one per cent. of my fillings in the past year will show any discoloration. I use much the same cavity preparation that I would for a porcelain inlay except that I make slight undercuts in the cavities and do not extend the cavity as wide at the opening as is necessary for porcelain, extension for prevention, square enamel margins and fair access being the essential things.

In the manipulation of the material I follow the directions to the minutest detail except that I do not mix the material quite as stiff as directions call for.

The fillings are finished, wherever possible, with celluloid strips assisted by agate instruments. If there is not time to finish both the lingual and labial surfaces, I finish the labial surface with the celluloid strip and let the cement thoroughly harden and then finish lingual surface afterwards with stones and disks. In my experience nothing gives so good a surface as a celluloid strip that has been oiled with vaseline and all of the oil rubbed off that can be taken off by repeatedly drawing strip through the fingers. I think that anyone who will learn to use the material and will follow directions exactly and use it where it is indicated will not have anything but praise for it, but he who attempts to use it in a careless manner will surely come to grief.

I find some trouble in obtaining the correct shade and think the manufacturers should put on the market some shades that are more intense than what we now have. It is easy to modify a dark shade with a lighter one but if there are no shades as dark as the tooth it is an impossible proposition.

DR. L. M. COWARDIN, RICHMOND, VA.

1. I have not used them because the conditions which must of necessity always attend the mixing and insertion of cements for permanent fillings are quite insurmountable, viz.: Cements are chemical compounds, and for uniform results it is required that their ingredients shall be exactly proportioned, that they shall be mixed for an exact length of time and under exact conditions of temperature and moisture, and that the quality of the mixing process must always be the same.

Finally they shall be placed in the cavity and not disturbed after the setting process has reached an exact point. I cannot conceive that it is possible to make such conditions practicable in a dental office.

2. For reasons given and from the work done by others that I have seen, *I do not*.

6. Very poor as a rule.

DR. E. E. HAVERSTICK, ST. LOUIS, MO.

1. I have been using silicate cements for two years and (2) do not consider it altogether permanent, that is, for all cavities—contour, for instance.

3. The failures are caused by imperfect manipulation and lack of edge strength.

4. I have noticed leakage about the fillings only in those cases where they were imperfectly inserted; that is, where they were not packed perfectly against the margins of the cavity, or are drawn away from the margin by the matrix.

5. I do not use a cavity lining except where the cavity is very deep and in those cases I use chloropercha thoroughly evaporated and then pressed under heat.

6. I have, and with very good results except in the first few fillings which I inserted.

7. (a) I have not. (c) With cuttlefish disks and strips using paraffine on them.

8. Only those which were imperfectly manipulated.

9. (a) Sharp, well defined margins, without bevels. (b) Work fillings stiff, quickly, and insert quickly in small pieces, packing hard against matrix which has been covered with soap stone and wiped so that little remains. Move the matrix slightly so as to obtain a fresh part of matrix, which will prevent sticking when brought over filling and burnished with great pressure. (c) Sand paper disks, strips and stones coated with paraffine until an appropriate contour is reached, and then with fine cuttlefish disks coated with paraffine until surface is obtained.

DR. H. M. SEMANS, COLUMBUS, OHIO.

1. Four years.

2. A lingering doubt yet as to their permanency: am seeing some now, however, in for three years with a good promise of permanency.

3. The worst cause of failure has been moisture during application; the next, faulty manipulation in mixing and placing; and next, faulty instrumentation, that is, the use of instruments other than bone or agate.

4. Yes, in a number of cases.

5. For the past year I have tried oxyphosphate of zinc as a cavity lining and am now watching results.

6. Yes. I find more or less of a granular surface where the filling has been in for more than two years. I find edge conditions only fair, probably due to faulty manipulation (since, to a great extent, overcome) and

contraction of material (which I think the oxyphosphate of zinc will take care of).

7. In most cases, no. The contact point is easily obtained immediately, with a general outline of proper contour, but where the material meets with tooth borders I do not get altogether satisfactory immediate results in most of the cases, thus necessitating trimming and polishing with disks and strips lubricated with cocoa butter. I make use of the thin celluloid strips lubricated with cocoa butter immediately after placing the proper amount in the cavity, thus getting a fair outline of proper contour, yet in most of such cases I feel called upon for further finishing.

8. No discoloration of a general character is noticed since I discarded certain instruments and methods known to produce a discoloration. On the other hand, I notice a change to a slight degree in the shading, a little darker.

9. (a) Strong walls, good retention, strong enamel edge with usage only where there is no stress or strain. (b) I try to obtain a proper mix without much loss of time and especially without cessation of spatulation, with as quick application as possible, then rest for 30 minutes all under the rubber dam.

DR. M. L. RHEIN, NEW YORK.

I am too much pressed for time to answer your questions about Silicate Cements in detail. I have been using them very slightly for about three and a half years. From my own experience and from watching them in mouths where they have been inserted by others, I can see no reason for considering them permanent.

I feel that I understand the manipulation of them thoroughly, that is, according to the views of the importer of the Asch Silicate. I simply add this, because I do not think my lack of belief in their permanency is due to any faulty manipulation on my part. If my view of their lack of permanency is correct, it appears to me that the great amount of advocacy which these cements have received during the past two years is a very bad thing for the public and dentists alike.

While it undoubtedly has better lasting qualities than some cements that I have tried in years gone by, anything short of absolute permanency makes fillings of this material inadvisable, in other than exceptional cases. The desire to obtain a fee with little labor and effort and little annoyance to the patient, is one that is so eagerly grasped by the average practitioner that I do not think a greater duty to the profession exists than a note of warning in this respect.

It appears to be the opinion of the man whose work has permanent value, that valuable results to the patient can only be obtained when sufficient energy has been expended by the dentist. Now I want to add that my own view must be taken with the understanding that I avoid using a cement filling wherever it is feasible to insert a permanent one.

FROM D. D. S., CLEVELAND, OHIO.

I received your list of questions on the use of silicate cements.

While I have used silicate cement for some time, I do not feel that in the limited number of cases I should be justified in drawing conclusions that would or should carry the mark of authority.

It seems to me that where they have been properly inserted these fillings give evidence of permanency. Any failures I have had I believe were due to faulty manipulation of the material, either in the proper mixing of the component parts, in the speed with which it is placed into the cavity, the drawing of the mass away from the cavity walls, or failure to produce a solid mass which permits the operator to produce a good surface. Leakage about the fillings is due, I think, not so much to fault in the material but to failure to properly adapt it to the cavity walls, or having placed it there, to drawing it away while caring for the rest of the filling. I have not noticed leakage so far. I often line the cavity with oxyphosphate of zinc cement.

Many of the fillings which have been in the mouth for some time show splendid surfaces with good edges. Some seem to have a rough chalky appearance, which I attribute to faulty mixing of the components, or to disturbing the mass while inserting the material after crystallization is well advanced. The nearest approach to absolute dryness should be attained throughout.

The cavities are prepared as for an amalgam filling, i. e., with retentive form, sharp enamel margins and rounded angles throughout. I have avoided making extensive contour restorations, but have restricted its use largely to cavities not subject to the stress of mastication—except in a few cases where the cavity has four supporting walls—and also those not open to the abrasive effect of the tooth brush and powder.

The powder and liquid should be rapidly united (not worked as is usual with ordinary cements), as soon after their removal from the bottles as possible. When the liquid is thoroughly satisfied with powder it will be found to work like putty. It should be put into the cavity like an amalgam, in small particles, placed with great speed where you wish them to remain. Once in place allow it to become thoroughly set, when it can be polished with fine discs and strips and corundum stones, (carborundum stones I think too coarse).

Celluloid discs and strips used with pumice make good finishing materials. The celluloid strips make the best matrices, as they leave a very dense and highly polished surface. I use agate slab, spatula and instruments, also freshly polished steel instruments to insert the material, keeping them clean by dipping them into water and wiping them dry on a clean linen cloth, during the operation.

I think we have in silicate cement a material to fill a long felt want, but until it has been developed to a higher degree of excellence it must be used with exceeding care.

"IT IS YOUR MOVE NEXT"*

By J. L. Mewborn, D. D. S., Memphis, Tenn.

IN an article in the May number of the *Dental Brief* and from other sources I find some good things which I shall weave in with the warp and woof of my appeal to the Dentists of this State for their greater zeal and enthusiasm in the self-imposed Herculean task of guarding the human organs of mastication against the perpetual assaults of the microbe and the erosive action of the ferments. If "eternal vigilance is the price of liberty," your watchful care and responsibility in this field of action is greater than that of the statesman whose duty it is to safeguard our free institutions against graft, internal strife and the encroachments of a foreign foe.

Placed at the very beginning of the alimentary canal, intimately connected with the respiratory, the circulatory and nervous systems, by their sympathetic and reflex relations these dominate the whole organism of man. Knowing that diseases of the teeth are universal, and believing there is a greater loss of physical beauty and facial expression, more direct suffering from malnutrition and consequent shortening of life, more nervous diseases entailed on posterity from ravages of decay and ill-advised and unnecessary loss of the natural organs of mastication than from all other specific diseases combined, we feel that the world should recognize the importance of our labors in combating these injurious tendencies, which *must fail* unless begun almost at the threshold of human existence.

In the pre-historic or primitive state of man, these deleterious influences or conditions did not exist, but followed so closely upon the footsteps of civilization that caries of the teeth has become almost a national calamity, and now we realize that the human organs of mastication, unlike any other organs or tissues of the body, are subject to decay, and liable to be utterly lost early in life.

Until very recent years, no organized or associated effort on the part of the dental profession has ever been made to secure the cooperation of the public by educating the nation in the care of the teeth, or to anticipate this result through coming generations, by teaching the importance of Oral Hygiene and demonstrating the intricate technique of dental prophylaxis in the public schools of the country.

Even now, in the very inception of this magnitudinous educational propaganda, our motives have been impugned by narrow minded individuals, and the whole scheme stigmatized as a crusade for business. You may say to such that the United States census shows a constantly increasing population of over eighty millions; and statistics show that less than ten per cent of that number *ever* visit a dentist, and still the thirty-five thousand dentists in the United States manage to earn a living from that eight millions who believe there can be no perfect health with a foul mouth.

*Read before the Tennessee State Dental Association May, 1909.

But, suppose the whole eighty millions of American citizens should all be required to report to the dentists and have nothing done but their teeth cleaned. Dr. J. Y. Crawford says there are not enough dentists in the United States to do the job. I say emphatically, no!—not if the thirty-five thousand should work ten hours a day for three hundred and sixty-five days in the year, requiring each one to serve six patients a day, there would still be left at the end of the year three millions four hundred and fifty thousand in the waiting rooms, threatening to go to some other dentist. Now, there must be a reason why this remaining seventy-two millions know nothing of oral hygiene, and care nothing for the necessity and gentility of a clean and healthy mouth. As dentists, you know one word that expresses that reason—*Ignorance*. They don't know the value of their teeth, nor how to care for them. They have never been taught. They have never acquired the soap and tooth-brush habit. They have never learned that lesson taught by Mrs. Walker's pamphlet, that without perfect teeth there cannot be perfect mastication, perfect digestion, perfect assimilation, perfect nutrition or perfect health, and without health we cannot attain that highest state of mental, moral or physical growth, or good citizenship. How can they know these things unless they are taught?

Heretofore we have relied on the mothers in the nursery, and the teachers in the school room to engraft on the very being of childhood that cardinal principle of tooth preservation, *oral hygiene, mouth sanitation*. But this was like the blind leading the blind. We expected the mothers and teachers to do the work, when they themselves had never been taught. The teachers spend too much time teaching the children the *name* of the *first white child* born in America; the length of the longest river; the height of the tallest mountain and a great many other things which would never benefit the child even if they could be remembered. Neither can we rely on the text books in the schools, for the books on physiology adopted and *now taught* in the public schools in *this State* are full of dogmatic statements as to the injurious effects of whisky, tobacco and cigarettes on every organ, tissue and function of the body, while there are but a *few* lines or pages devoted to the teeth.

In a recent discussion on this subject before the National Dental Association, at Birmingham, Dr. Paul E. White, of Boston, made the statement that there was not a single book on hygiene taught in the schools today that contains a single chapter on the important subject of oral hygiene. He further stated, that three-fourths of all the ills that harass humanity will be banished when proper attention is paid to the care and treatment of the mouth and teeth.

The two great features of the International Anti-tuberculosis crusade are *fresh air* and *good food*. The fresh air is plentiful and cheap; and while the good food can be furnished by charitable organizations under state supervision, it requires a set of grinders to prepare it for use.

You are all familiar with the causes of tooth decay, so satisfactorily

and scientifically established by the late Dr. W. D. Miller, which eliminates all doubtful theories, and enables us more intelligently to combat its ravages. You all know the chemical reaction, and the pathological conditions produced by the action of the *chryptococcus cerevicia*—the yeast plant—or ferments, upon the accumulations of food debris in the oral cavity. But those seventy-two millions who never go to a dentist—how do you expect them to know anything about lactic acid, oral hygiene or dental prophylaxis, or that if their teeth were always kept *perfectly clean* they would never decay? They have not been taught, how can they know?

Statistics show that there are thirty millions of school children in the United States, and that 80 per cent of these have decayed teeth: if the same proportion holds, there are twenty-seven millions of school children who form a part of, or are children of that great multitude, seventy-two millions, who never visit the dentist. What a field for the dental missionary and the philanthropist! In the school-room, where future generations are congregated, in their most receptive period of life, is the place to make lasting impressions, to teach them from primary grades up, that the deciduous or baby teeth consist of ten in each jaw; that these begin to erupt about the sixth month, and are completed about the twenty-fourth month; and all teeth erupted after that time are permanent ones.

That the first permanent tooth is called the sixth year molar, is erupted next back of the baby molars at six years old and is the most valuable tooth of the whole series. That the baby teeth begin in the front to shed at six years old and proceeding backward, the process is completed at twelve years. At the neglect of every other duty, the sacrifice of every other comfort and pleasure, these baby teeth should be watched and cleaned and polished and preserved at all hazards until nature displaces them. It is worse than criminal for any parent to evade or neglect this duty to his child.

It is *pitiable, indeed*, to see the average child, between the ages of four and twelve, who has been left to his own resources as to the care of his teeth. He does not own a tooth-brush: the twenty beautiful pearls in his mouth soon become corroded with green stain and covered with tartar, food particles and foreign matter are left impacted in the sulci, the interdental spaces and cervical border. In these undisturbed retreats, hordes of microbes find their feeding ground and favorite nesting place, where lactic acid is produced that dissolves out the lime salts in the tooth, leaving a hole, a cavity, a home, a hot bed, a culture medium in which he feasts, revels and proliferates day and night, and in every act of development giving rise to ptomaines and toxic products. See the wreck and ruin—how rapidly it progresses. Cavities multiplying; crowns crumbling; teeth sensitive; nerves exposed; gums sore; jaws swollen; abscesses discharging; cannot eat; can't sleep; can't study or sit still in the school room; putrescent matter taken into the stomach with every drink of water and every swallow of food, and a breath so disgustingly foul and infectious with disease breeding germs that

a few such cases in a badly ventilated school-room would render it as deadly as the Black-hole of Calcutta.

This tragic picture is not an exaggerated painting of one of the twenty-seven millions of our school population who never visit a dentist—(more than 80 per cent of whom have decayed teeth) but one that may be found in any of the lower grades of our public schools. These schools have served as incubators of tuberculosis and numerous other communicable diseases, and are agents for their propagation and dissemination into the millions of homes which these pupils represent. Here is where reforms and innovations must be made. A dentist's certificate that the mouth is in a hygienic condition is of far greater importance than a vaccination certificate to admit a child to our public schools. I agree with Dr. Paul White of Boston, that oral hygiene should be taught in the public schools by dentists, and that every school board and Board of Health should have a dentist of good standing in its membership.

A few days ago at a meeting of The State Homeopathic Association in St. Louis, in discussing the tonsils, the opinion prevailed that no one had ever found what its *function* was; that it was a germ breeding nuisance, that it should universally be removed in every incipient or threatened case of tuberculosis.

When the mouth is alive with germs the tonsils are most sure to become infected and in the more recent text books on appendicitis mention is made and cases reported in which a patient suffering from tonsilitis, a few days later developed acute appendicitis, and the organisms recovered from the appendix were the same as those found in the tonsils.

How often have dentists cured obscure infected conditions of the tonsils, and reflex neuralgic conditions of the ear, eye, nose and sinuses by putting patient's teeth and mouth in a hygienic condition.

Careful attention to the teeth and disinfection of the mouth should begin with the *infant* whose gastro-intestinal tract is most susceptible. Dr. Paul White states:—

“It is a well known fact that dental treatment early in life prevents more disease in after life than any other measure taken by governments—*vaccination not excepted.*”

The great sanitary reform of the world is not the abolition of the village closet, but it lies in the Herculean task of revolutionizing the unsanitary and infectious condition of the human mouth.

Dr. Osler, of Oxford, in the London Lancet, says:

“If I were asked to say whether more physical deterioration was produced by alcohol or by defective teeth, I should unhesitatingly say defective teeth.”

In another connection the same authority says:—

“In all the departments of hygiene none is more important than oral hygiene.”

Dr. D. D. Smith, of Philadelphia, stated that he had seen indigestion, irritation of the kidneys, and many other abnormal conditions cured by no treatment other than disinfection of the mouth.

The purity of the milk supply to a limited number of children in our cities is an important phase of our pure food law: but think of the thirty millions of our school population who are exposed to the contaminating influences of infectious matter from dirty mouths and abscessed teeth taken into the stomach, or mephitic gases exhaled or sneezed into over-crowded school rooms, to be inhaled and re-inhaled into the lungs—without comment from the consulting specialist, or protest from the Board of Health; and yet the authorities boast of a salaried Inspector to test the scant milk supply for infectious germs. Oh, consistency, thou art a jewel! May we not hope for the time soon to come when the dentist will have the physician educated up to a realization of the benefits to be derived by the maintenance of mouth sanitation in *mutual* patients!

The high-rolling Conrad, of St. Louis, said a few days ago at the National Association in Birmingham, that the greatest crime the dentist commits against humanity was the extraction of teeth. That the extraction of one tooth would forever mar the beauty of the prettiest woman in America. These seventy-two millions of people do not neglect their teeth because they want to lose them, but in desperation from pain and loss of sleep, like the silly fly, are easily beguiled into the "Painless Dental Parlor" and robbed and mutilated while there. From the machinations of these vampires, ensconced within cunningly devised lairs of printers' ink and a vocabulary of lies, these acts of vandalism are openly perpetrated in violation of a clause in our dental law whose penalty is the revocation of their license to practice dentistry.

By your indifference to the ineffectiveness of this law or the inefficiency of those whose duty it is to enforce that law, these dens flourish in prominent locations in every large city in the land, and there the blood of slaughtered millions of valuable dental organs cry aloud from toothless gums for protection.

In the world's progress each succeeding century treads close upon the heels of its predecessor. The spirit of the times shows itself in the great progressive move for national health: the time is propitious and the world waits expectantly for this crusade of publicity and popular education on the care of teeth. The public *health* demands it. What person or class of persons is better qualified than the dentist to spread the good gospel of oral hygiene. *It is YOUR MOVE NEXT!* Revise the effete, the hide-bound, the antiquated moth-eaten 19th Century Code of Ethics, which dwarfs our usefulness by confining our teachings and our literature to the dental journals. Let us have a *20th Century Code of Ethics which will permit us to reach the people* and teach the people through a "Dental Department" column, in the magazines and newspapers, to consist of articles on the care

of the teeth by capable writers, like the one by Frederick J. Haskins in last Sunday's *Commercial Appeal*; by lectures in public schools and by well endorsed pamphlets distributed by individual dentists.

Finally! It is your *duty*, and you *must* see to it, that at least the children in the public schools of this State are taught the proper care of their teeth, and are impressed with the assurance that it is as much their privilege to enjoy the blessings of good teeth as their duty to shun the evils of whisky, tobacco and cigarettes; thereby future generations will reap the benefits of your efforts to promote the health, happiness and longevity of the human race.

EARLY DENTISTRY IN AMERICA

By H. L. Ambler, M. S., D. D. S., M. D., Cleveland, Ohio

(Continued from page 775 October Summary.)

The *Boston Gazette* and the *Country Journal* for Oct. 8, 1781, contains the following: "Mr. Templeman, Surgeon-Dentist, encouraged by the success of his practice in different parts of Europe and America, begs leave to acquaint the public that he is furnished with materials with which, and a dexterity peculiar to the art, he preserves the teeth, cures the scurvy in the gums, extracts and transplants teeth, scales teeth, substitutes artificial teeth, gives the teeth proper vacancie, regulates children's teeth, and plumbs concave teeth, which prevents their colluting or being offensive, besides many other operations too tedious to mention, as without the least pain (except that of extracting), since scaling the teeth is carefully to take from them an infectious tartar which destroys the enamel, eats the gums, renders them spongy, ulcerated and incapable of affording any support; its being removed, which is not in the power of composition to effect, renders the gums firm, and leaves the teeth in their natural purity. Many people blame the climate, etc., for the loss of teeth; but it is too often the case, as I've observed in the course of my practice on the Continent, that but few people take care of their teeth, till they become defective. The Europeans are remarkable (particularly the French) for their good and beautiful teeth, owing to their own care and knowledge of the art.

N. B.—Mr. Templeman will, with pleasure, attend those ladies and gentlemen who cannot conveniently wait on him at Mrs. Frazier's, near the Town House, Boston."

Thomas Chilton, of Currioman, was born in 1728, and married a Pierce; at death his estate reverted to his brother William; his widow married a Templeman, and perhaps he is the Templeman alluded to as being a dentist.

The *Continental Journal and Weekly Advertiser* for April 20, 1780, contains the following: "Gentlemen and ladies that may want artificial teeth, may have them made and fixed in the neatest manner, without the least pain, by Isaac Greenwood, Ivory Turner, at his house in the Main

street, between the old south and Seven-Star Lane at the South End of Boston; they help the speech as becoming as the natural ones. Ladies, wax rots your teeth and gums, throw it away. Come and have your teeth cleansed, and if done in time, saves them from rotting and parting from the gums.

N. B.—Said Greenwood continues to make artificial legs and hands; turns in ivory, bone, silver and wood; makes fifes, German flutes, hautboys, etc., etc. Ladies, please send your umbrellas to be mended and covered."

At this time the fee for drawing a tooth was two shillings if the patient called on the doctor; if not, a fee for a visit was added, and if it was a jaw-splitting tooth-drawing, it cost the sufferer eight pence extra. Probably this is the same Greenwood that advertised in a Boston paper in 1771.

Some claim that the first native American dentist was Isaac Green-



Greenwood Coat of Arms.

wood, Jr., of Boston, who, in 1770, was called a good practical dentist. He was the father of three sons who were dentists; William settled in Salem, Mass., in 1790, and later moved to Boston, where he died in 1851, aged 85 years, after enjoying an excellent practice and reputation. Clark went to New York City and opened an office in 1778; John was born in Boston May 17, 1760, and joined the provincial army in May, 1775, and was fife-major in Colonel John Patterson's regiment, and fought in the battle of Bunker Hill and Trenton; after the latter battle he left the land service and sailed under Captains John Manly, David Porter, John Carnes and others; he was four times a prisoner of war, having been taken the last time when in command of a six-gun schooner running from Baltimore to St. Eustatius. At the close of the war he went to New York City and began his dental career. On March 22, 1788, he was married by Doctor John Rogers to Elizabeth, daughter of William and Jane Coessart Weaver, by whom he had one daughter, Mrs. Jane W. Ross, and three sons, Isaac J., Clark and John W., through the first of whom only he has male descendants. Greenwood was among the early ones in the U. S. to swage gold plates, and he constructed an entire denture for Washington, which he carved from the tusk

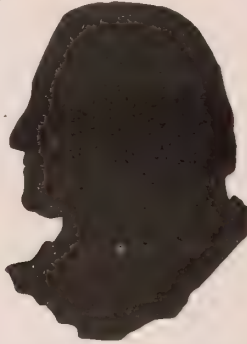
of a hippopotamus. The lower set was made of one solid piece, teeth and base carved together, in the upper denture the teeth were fastened on with gold rivets, and both sets kept in place with spiral springs. In 1798 he repaired two sets of teeth he made for Washington, and he mentions screwing the teeth to the bars instead of having the bars cast red-hot on them.

Greenwood was an illustrious and honored practitioner of his time, and died in New York Nov. 16, 1819.

In 1775 Dr. Dubuke, a Frenchman, made the following announcement:

"Doctor Dubuke, Oculist and Dentist, just arrived from Boston, begs leave to inform the public in general that he practices physie and surgery, and undertakes to cure the following diseases and ailments: (Here follows a long list).

"The doctor prepares and sells extraordinary good tooth-drops, which cure the toothache in one minute, teeth powder that makes them as white as snow in a short time, and cures the scurvy in the gums, asmatic pills



Silhouette of Washington.

which remove the complaint in a few minutes; stomach pills in boxes with proper directions. He also cleans teeth in the neatest manner, and sets artificial ones. He will wait on any ladies or gentlemen that will honor him with their commands, at Mrs. Elizabeth Anderson's, in Broad street.

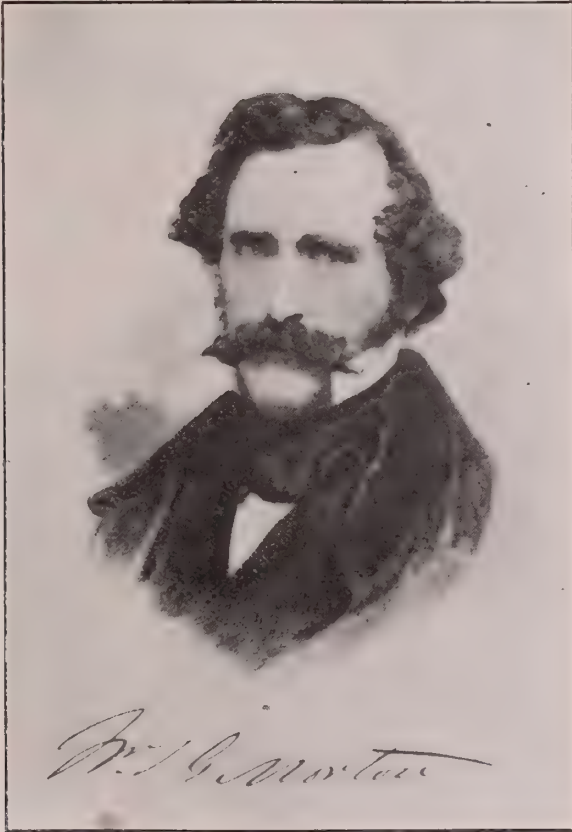
"The Constitutional Gazette, N. Y., Oct. 18, 1775."

In many of the engravings of Washington it is common to see a fullness about the mouth, which is due to the artificial denture. At that time false teeth were kept in position either by springs or clasps, the principle of holding them in place by adhesion and atmospheric pressure was not understood. In the proceedings of the Massachusetts Historical Society, volume thirteen, page one hundred and twenty-six, is a profil-silhouette—taken in the last year of the presidency, before the portrait was painted, by Gilbert Stuart, and therefore, without its defects in (around) the mouth.

In the proceedings of the above society, volume two, page one hundred and fifty-six, the following appears: "Mr. Appleton spoke of a portrait of Washington now on exhibition at the Museum of Fine Arts in Boston, which is similar to the picture of which a copy belongs to the society. It is one of the group of reproductions painted by Charles Wilson Peale,

formerly a dentist, and adds one to the list recorded in our proceedings for November, 1874. It was owned by Elias Boudinot, well known in our history, and is now the property of his descendant, Miss Boudinot, and is offered for sale at the price of six thousand dollars. It is somewhat smaller than all the others, so far as known, and is, perhaps, more likely than they to have been painted from life."

Josiah Flagg, one of our early native American dentists, learned the



William T. G. Morton.

science and art from Joseph Lemaire, a Frenchman, who was a dentist and soldier, and came here to assist us during the war from 1781 to 1784.

At the close of the war Flagg began practice in Boston, and in 1785 his advertisement was as follows: "He practices dentistry in all its branches, fixes gold roofs and palates, and artificial teeth of any quality without any injury to natural ones, greatly assisting the pronunciation and the swallow."

In 1815 J. Parkhurst, 47 Liberty street, Boston, advertised as follows: "I perform every necessary operation on the teeth and gums, removing with care, fixed tartar, clean, file and polish teeth without injury to the

enamel, and affix in the best manner artificial teeth. I have recently established an *electrical* machine which is capable of every requisite operation."

Joshua Tucker was born Aug. 7, 1800, and at the age of eighteen he engaged in the mercantile business for a few years, after which he began the study of dentistry with D. C. Ambler, of Columbia, South Carolina, and continued with C. Starr Brewster, of Charlestown, in the same state, meanwhile attending lectures at the South Carolina Medical College. After completing his medical and dental studies he went to Havana and practiced for several years, then he went to Boston, Mass., in 1833, and became associated with D. Harwood, and their names were well known throughout this country and Europe. In 1853, being impaired in health, he visited in Europe for two years, securing the best of medical skill, but without permanent relief. On returning home he resumed active practice, from which he retired about 1877. Coming from a long lived and hardy race, simple and pure in his habits, he fought bravely for renewed health, and was for some years before his death comparatively free from suffering. He was loved



Mass. General Hospital, Boston, Mass.

and respected by all who knew him, and was a member of the Massachusetts Medical Society which he joined in 1838, and was president and honorary member of numerous professional societies, including the Odontological Society of Great Britain. He died Nov. 7, 1881, aged eighty-one years.

William T. G. Morton was born in Charlton, Mass., Aug. 9, 1819, and after a high school education he came to Boston and was a salesman; later he went to Baltimore and studied at the College of Dental Surgery. In 1841 he began practice in Farmington, Conn., where he met Horace Wells, a dentist of Hartford, and they formed a partnership and moved to Boston, but Wells returned to Hartford in March, 1844. Morton opened an office at 19 Fremont street, and entered his name as a medical student in the office of Charles Jackson, then he matriculated in the Harvard Medical School in 1844, but he was never graduated, as the necessity of gaining a living from dentistry, together with the attention he was giving to ether anesthesia, interrupted his medical studies. He was given the honorary degree of M. D. by Washington University of Baltimore in 1849. In 1844 Morton used ether as a local anesthetic by applying it to the gums of a Miss Parrott, for whom he filled a sensitive tooth, very successfully. In 1846 he began a

series of ether experiments on animals. On Sept. 30, 1846, he administered ether to Eben H. Frost, for whom he extracted a "deeply adherent bicuspid tooth, without producing any pain." Frost was unconscious. A folded towel was saturated with ether and held to the patient's nose and mouth until primary anesthesia was produced, and Frost gave an affidavit in accordance with above statement. In October following, at the Massachusetts General Hospital in Boston, Morton gave the first public demonstration of ether anesthesia, when he rendered unconscious Gilbert Abbott for a surgical operation which was successful and the patient suffered no pain. Morton went on experimenting and giving ether here and there for private operators. Doctor Bigelow, of Boston, sent an account of this discovery to Francis Booth, of London, and he told the great Liston, who immediately and successfully used it in his surgical operations. Ether was called



Statue of Ether, Boston, Mass.

Letheon, and in June, 1849, was administered to thirty-nine patients at Doctor Morton's office.

In 1867 a monument was dedicated almost within sight of the scene of the discovery, to commemorate the event, yet it fails to name the discoverer. The venerable Jacob Bigelow said: "The suffering and exempted world has not forgotten the poor dentist, who, amid poverty, privation and discouragement, matured and established the most beneficial discovery which has blessed humanity since the primeval days of Paradise." Henry J. Bigelow said: "Without Morton there is no evidence that the world would have known ether to the present day."

The inscriptions on the sides of the monument are as follows: "In gratitude for the relief of human suffering by the inhaling of ether, a citizen of Boston has erected this monument, A. D., 1867. The gift of Thomas Lee."

"Neither shall there be any more pain,—Rev."

"This also cometh forth from the Lord of hosts which is wonderful in counsel and excellent in working."—Isaiah.

"To commemorate the discovery that the inhaling of ether causes insensibility to pain, first proved to the world at the Massachusetts General Hospital in Boston, October, A. D., 1846."

The writer had a card which read as follows: "In commemoration of the fiftieth anniversary of the first public demonstration of surgical anesthesia at the Massachusetts General Hospital, Boston, Oct. 16, 1846. The honor of your company is requested October 16, 1896."

Doctor Morton died of apoplexy in New York, July 15, 1868.

In 1843 E. G. Kelley, M. D., of Boston, wrote "A Treatise on the Human Teeth," in which he says: "Ivory, bone, animal and human teeth are used very little now, as mineral teeth have superseded them, dentists manufacture them for themselves, but there are some on the market. The French teeth sent here look like porcelain ware. Two or three manufacturers here sell at wholesale, and one of the factories employs thirty workmen, and some of the teeth they make look like southern corn."

"I make mineral teeth and publish what teeth are made of, and I make small, narrow yellowish teeth in imitation of nature."

"Pivot teeth should have gold pins encased in wood, as this is the best way to set them."

"In cases when the teeth can no longer be kept in on separate roots, they are set on a plate and this is fastened by two or more pins to the remaining sound roots; these cannot be taken out by the wearer."

"In some instances we carve and fuse the requisite number of teeth in one block, with pivot holes corresponding to sound roots, and those cannot be removed for cleansing."

"I use clasps, suction-plates and springs."

He gives a short description of each.

FORM in the mind a picture of the things that you would like to have, to do, and to be. Carefully mature a plan that seems to you to offer the shortest, surest road to these ends; and then go right, straight forward, unwaveringly, unvaryingly, forcefully. Having decided the best method for the accomplishment of your purposes, follow those methods today, tomorrow, and every other succeeding day and tomorrow until the goal is reached. The path chosen is not likely to be smooth, thornless and easy, but then, there are no smooth, easy, thornless paths to success. And this consolation you will have when skies are lowering and discouragements press upon you: Any other road would be as hard, and you haven't time to try another. Go right ahead. You may think often that defeat is certain. Then remember that no man ever is whipped until he stops fighting.

SOME PRINCIPLES OF RETENTION IN ORTHODONTIA

By Martin Dewey, M. D., D. D. S., Kansas City, Mo.

(Continued from page 798 October Summary.)

INTERMAXILLARY FORCE.

Intermaxillary force of retention is that form in which the force necessary to hold a tooth or teeth of one arch is obtained from a tooth or teeth in the opposite arch. Intermaxillary retention is used in so many forms and can be made to embody the principles of other forms to such an extent that it is impossible to define it in a few words any better than I have. Besides partaking of simple and reciprocal principles, we find that active and passive forces enter into its use. The virtues of active and passive forces in retention will be taken up separately in a later article.

There are so many different phases of intermaxillary retention that I will take them up one at a time and try to show the different principles involved in the use of this most important form of retention, for, without it, we would still be extracting teeth in Class II and III cases.

Primary intermaxillary retention is that form whereby a tooth in one arch is made to retain a tooth in the other. Under this definition we have three distinct conditions arising which possess different principles. We have a passive and an active force entering into the case, and a simple and reciprocal force of retention.

Take the simplest case which we can have and analyzing it from the point of principles and forces used, we will see what we have. Take a superior canine which has been in infra-occlusion and we wish to exert a downward force on it. By placing a band with a slight spur on it to engage a rubber band on the canine, and a similar band on the lower canine or premolar, the rubber band will exert enough force to hold the tooth in its proper position. The fact that the lower tooth has not been moved and we expect it to exert enough force to hold the moved tooth, would make this particular case one of simple active retention. The fact that a rubber ligature is used would make it an active form of retention. To describe this form in a few words, we could then say we had a primary, simple, active, intermaxillary retention. I am aware that some will take exception to such a term, but the term describes the condition, and such is the intent of names. Take any scientific classification and you will find a similar plan followed. Some may even remember having heard the terms *sternocleidomastoid*, *depressor labii inferioris*, and *levator labii superioris alaeque nasi*.

Another condition which would take a different name to describe, yet one that would admit of easy description, would be a case where both the upper and lower canines had been moved from infra-occlusion. Knowing the tendency for such cases to relapse, they can be easily retained by plain bands, which have small spurs for the attachment of ligatures, being placed

upon the teeth. As both teeth have been moved we would then have a reciprocal force. Other conditions being the same as found in the first illustration we would have a primary, reciprocal, active, intermaxillary force of retention.

I have spoken about primary forms of intermaxillary retention which depended upon an active force. By primary forms, I mean some device which depends upon its force from a tooth in one arch, and acts on a tooth in the opposite arch. When we use the rubber ligature we get an active force. I will now describe a condition of primary intermaxillary retention where the passive force is used.

The passive force was the first one used in retention, either in intermaxillary or any other form. The primary form of intermaxillary force would be used where a superior first molar had been moved from a position of lingual occlusion into normal occlusion. If the cusps are long, we will need little mechanical retention, as the natural forces will maintain the teeth in their proper positions. If mechanical retention is demanded, by placing a spur on the D band, after the tube has been removed so it will engage the buccal surface of the lower molar, we have a primary, simple, passive, intermaxillary retention. If the upper molar has been moved from lingual occlusion and the lower from buccal occlusion, the same appliance would then be primary, reciprocal, passive, intermaxillary retention. Some may say, "How is it possible to have the same appliance classed as exerting a simple force in one case and in another case be exerting a reciprocal force?" The reason is that in the first cases, where the lower molar has not been moved, we are depending upon a firm tooth to hold a tooth that has been moved into normal occlusion. The reaction of the device is lost in the firm tooth. In the second case we depend upon the force necessary to hold one tooth to also hold the other tooth which has been moved in the opposite direction. In the second case the action and reaction are utilized.

COMPOUND INTERMAXILLARY RETENTION.

Having described to some length the primary forms of intermaxillary retention, or those forms where the appliance has been placed upon but one tooth on one arch and obtains its force from, or acts upon but one tooth of the opposite arch, we will pass to the compound form, which, as its name suggests, deals with more than one tooth in each arch. Compound intermaxillary retention is that form whereby the force required to retain teeth in one arch is derived from a tooth or teeth in the opposite arch. In other words, the force is derived from or acts upon more than one tooth.

Here again several principles have been used which may be divided first, according to the force employed, as active and passive. Second, according to the construction of the appliance, as simple and stationary.

Intermaxillary retention had its birth about the time that Dr. Kingsley began the treatment of Class II cases by means of "jumping the bite." A lot of the argument and some of the failures which occurred were the

result of the retention of such cases being defective. In fact, the retention is yet a disputed point in the treatment of these cases. As Dr. Watson has said, we were able to treat them but not able to retain them. As a result of this being the case, ever since "jumping the bite" and the intermaxillary anchorage was evolved, there have arisen many forms of retention for Class II and III cases. One of the first to be adopted extensively in the retention of Class II cases is what is known as the plane and spur, as described in Dr. Angle's Sixth Edition. This form was used for many years by his students, although Dr. Angle was careful to state its defects.

This device consisted, as described in the sixth edition of Dr. Angle's work, of a plain molar clamp band, or a D band from which the tube had been removed, upon the first upper and lower molars, although any molar or premolar could be used. It was generally used upon both sides, but sometimes was used only on one side and then shifted to the other side, as the strain upon the molars was sufficient to tip and displace the molars. The real mechanical factor in the retainer for Class II cases, as used by Dr. Angle at that time, consisted of the lug which was soldered to the buccal surface of the upper band, and the spur which was soldered to the same surface of the lower band. The object of the device was to have the spur engage the mesial surface of the lug on the upper band. This of course prevented the lower teeth from assuming a distal position so long as the molars remained upright and the device remained intact. It then follows that the success of the appliance depended upon the stability of the molars plus the rigidity and strength of the appliance. Therefore, the first factor in the success of the retention of these cases was the molars, and we were told that they would have to be watched, as the backward force of the teeth and surrounding forces would cause the first molars to be displaced, the lower one being tipped forward and the upper one backward. It was also found that the lower molar would be somewhat depressed, especially the mesial portion. If there is anything that we do not want in Class II, Division I cases, it is the depression of the lower molars, as they demand elongation. So here was a serious condition which was constantly arising with this mechanical device, which may be defined as simple, passive, reciprocal, intermaxillary force of the compound variety. It was simple, because it partook of the qualities of simple anchorage, in that it depended upon the firmness of the molar teeth to furnish the force necessary to retain the others. Passive, because after the appliance was once adjusted, we depended upon the locking of the plane and spur to overcome the constant backward pull of the existing forces which had been disturbed. It was reciprocal in those cases where the lower teeth had been moved forward and the uppers backward, but if only the teeth in one arch had been moved, it was primary. Intermaxillary, because a tooth in one arch was exerting the force necessary to retain teeth in the opposite arch, and, because more than one tooth was being retained by the one appliance, it could also be spoken of as compound.

So we were taught that the spur and plane, which is a simple, passive,

intermaxillary force, would have to be watched for the reasons above mentioned. It was also pointed out that the appliance would have to be adjusted very carefully or the result would be the dropping back, to a certain extent, of some of the teeth. If the exactness required in the adjustment of the plane and spur had been its only drawback, it would have been a very small evil. However, it was found by some who were not the worst mechanics in orthodontia, that regardless of how carefully the device was adjusted, a chain of circumstances would follow: The molars would tip, the teeth settle back toward the old position of malocclusion, and the appliance break. In order to avoid some of these evils, the construction of the appliance was varied by some men to the extent of placing the plane on the lower band and the spur on the upper. This did not help very much, even if it was easier to adjust, as its advocates claimed; the teeth still tipped and settled back to a greater or less extent—generally a greater.

One of the first attempts to remedy the evil of the teeth dropping back as the molars tipped was to enlist other teeth and use upon them simple, passive, intermaxillary force. So similar planes and spurs were placed upon the premolars in some cases. I think Dr. Lourie used a band on the lower first premolar, which carried what was nothing more than an artificial lingual cusp to engage the mesial surface of the lingual cusp of the upper premolar. Dr. Angle used a spur and plane on the canines, and finally simplified the appliance by using a piece of metal on the buccal surface of the lower canine band which engaged the mesial occlusal edge of the upper canine. This had advantage over the molar retainer, as it required more force to tip the canines than it did the molars. The writer, taking from both the idea of Drs. Angle and Lourie, placed a lug upon the lingual surface of the upper canine which engaged the distal surface of the lower canine. Each of these plans had some virtue but all were defective because they exerted a passive force from a single tooth and that tooth depended upon simple anchorage to overcome this backward tendency of the teeth, which for some time tried to assume their old position of malocclusion.

In 1903, while connected with the Keokuk Dental College, and aware of the trouble experienced with the forms of retention then used to retain Class II cases, the writer thought of and used what he termed at that time stationary occlusal retention. (See proceedings of the Third Annual Meeting of the American Society of Orthodontists, Buffalo, N. Y.) The case with the appliance is shown in Figs. 1 and 2.

The object of this device (which was improperly illustrated in the publication of my paper in *Items of Interest* and the Proceedings of the Society) was to prevent the displacement of the molars by enlisting other teeth, and to utilize stationary anchorage instead of simple. It was but the idea of the traction screw as used by Dr. Angle in stationary anchorage applied to retention. In brief, the device consisted of D bands, placed upon the molars. The tube on the lower band was removed, and the anterior end placed toward the distal so the friction extension of the nut would fit

into the tube. Plain clamp bands were then placed upon the premolars. The arch was then cut slightly longer than required to reach from the molar to the canine. The piece which was to be used below was heated and the temper removed, and the unthreaded end bent at right angles, after which it was hammered sufficiently to make it stiff, as the right angle portion was to serve as the spur of the old plane and spur form.

This lower piece of arch was long enough to reach through the tube upon the molar band and the nut placed distally to the tube. The temper was also drawn from the piece of arch, which was to be used on the upper bands, and the unthreaded end bent so as to form a lug. This was also hammered until made hard. The bands were then placed upon the proper teeth, the apices of arch inserted, and the bands marked by scratching with an instrument, taken off and soldered to the premolar bands. This was made by free hand soldering, and in fact all retainers should be so made, for he who has to invest a retaining appliance to solder it has not reached the perfection of skill he should have.

In placing the appliance upon the teeth, both the molar and premolar bands of the respective arches were put on at the same time. As stationary anchorage was desired, all bands were cemented to the teeth. The backward tendency of the upper premolar was resisted by the piece of arch which projected backward into the tube on the molar band. The nut being mesial to the tube, we had a device which would resist any force which might be brought to bear upon the premolar. Likewise, the lower premolar was prevented from tipping forward by the piece of arch which extended through the tube on the lower molar and the nut, which was placed distally. In order for the lower premolar to tip forward the molar would also have to tip, or rather be raised out of the socket, for all joints being soldered joints, we had stationary retention.

This form of retention I now call stationary, passive, reciprocal, intermaxillary retention of the compound variety. So far as I know, it was never used by any one except the writer until Dr. Law, of Berlin, used a similar device which he called the Hook and Staple Retainer. The following description of his plan is taken from the "American Orthodontist." While it possesses an advantage over the simple plane and spur, it has the disadvantage of only being a reinforced simple anchorage instead of a stationary one. In order for it to be stationary all parts would have to be soldered.

"In Fig. 3 you will notice the double spur retainer. It is a modification of the Angle spur and plane, and when used we do not need a special retainer to retain the buccal expansion of the upper molars. Next we place bands on the laterals with staples on the lingual and labial surfaces. A piece of No. 22 wire is soldered to the end of the screw on the D band and allowed to extend forward, touching the bicuspid and cuspid, the end bent in the form of a hook to engage the staple on the lingual surface of

the lateral incisor band (Figs. 4 and 5). This retains the bicuspid and cuspid. The bands on the lateral incisors are connected by a wire which passes over the surface of the centrals (Fig. 6), the end of which is bent to engage the staples on the labial surface of the lateral bands. This wire has two short pieces soldered to it, and when in place the short pieces are



Fig. 1.

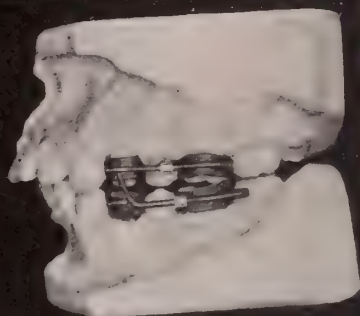


Fig. 2.

bent over and under the cutting edge of the centrals.* This retainer allows free movement of the teeth during the development of the tissues, and at the same time they are under perfect control. In a short time the hooks over the incisors can be dispensed with and only the main wire used. The molars are kept in their upright position and are not allowed to tip backward during retention.

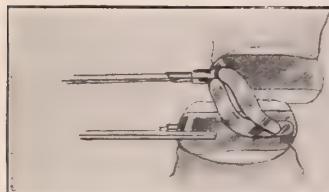


Fig. 3.

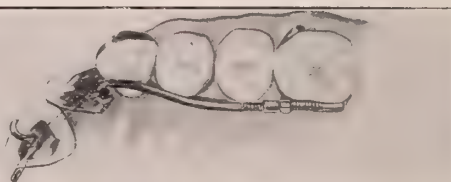


Fig. 4.

THE LOWER RETAINER

Fig. 7 shows the D band with a wire soldered to it in front of the spur. This wire passes forward past the bicuspid and the end, bent into the form of a hook, engages a staple which is soldered to the labial surface on a band which is placed on the cuspid. The cuspids are joined together by a wire on the lingual surface which (Fig. 8) retains the incisors and the expansion of the cuspids. By letting this wire extend past the cuspids,

*It is important that we place these short pieces of wire in such a position that when they are bent over the edge of the centrals that they come between the lower laterals and centrals or the hooks will interfere with the occlusion.—D.

the end can be so adjusted as to retain the first bicuspids. The connection between the molar and cuspid keeps the length of the arch correct and prevents any tipping of the molar. I have found, as a rule, that the lower arch does not require expansion in the molar region, therefore the sectional retainer is all that is required. If the lower molars have been expanded, I would suggest the use of a wire arch lingually to retain

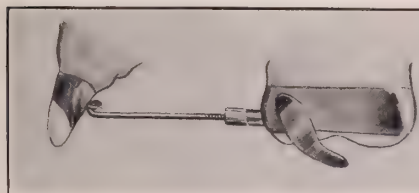


Fig. 5.



Fig. 6.

them. Bands may be placed on the cuspids or other teeth that have been rotated; these bands having spurs soldered to them will support the lingual arch."

Dr. Law's device and the writer's stationary appliance were intended to overcome all tendency of the molars to tip, and both were far superior to the simple intermaxillary appliance known as the plane and spur. However, they both possessed disadvantages to such an extent that the writer remembers what he knew in regard to stationary, passive, reciprocal retention only as a memory. The first disadvantage which I discovered in stationary retention was that it held the teeth too firmly. There was no doubt

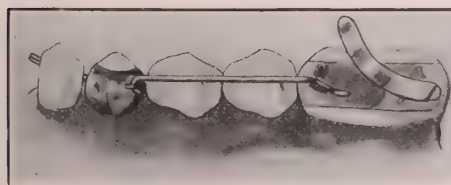


Fig. 7.



Fig. 8.

that all the force necessary could be obtained, the teeth did not relapse one particle, but they were held so rigidly that the forces of occlusion could not establish themselves. Dr. Law's hook and staple allows the teeth to settle more but does not possess as much force as if it were a more rigid device. As a passive force it is superior to all others. Secondly, it was a passive force, and experience has shown me that a passive force in intermaxillary retention is not as satisfactory as an active force.

(To be continued.)

PRESIDENT'S ADDRESS*

By I. H. Harrington, D. D. S., Louisville, Ky.

IN retiring from the office of president I regret that so little has been accomplished, the office having come to me without thought of its responsibility. I wish to thank your vice president for his suggestions as to the work of the association. I think there should be frequent correspondence between president and vice president, officers and members, in regard to association work. By this interchange of thought and advice, the members are better qualified to perform the work of the association.

I commend and praise you who are in attendance. Your presence is an inspiration. I would have your influence felt in discussion and work, but your presence is no small matter, and I commend you for it. The language of that distinguished and peerless leader Dr. Black, says:

"The ultimate and principal object for which a state dental society exists should be the betterment of the dental service rendered to the *people* of the state. I suggest that you make good *fellowship* the basis of your work. I believe failure or success depends primarily on this. If there is friction anywhere it must be eliminated. Every man should be willing to sacrifice some personal *desire* or *feeling*, if necessary, for the advancement of the cause, and those who cannot prosecute their *part* of the work *without friction* should refrain from taking an active part. If an organization is built up along the lines of harmony and good fellowship, all other matters will be easily taken care of as a natural result.

These words from so wise and eminent a man, are especially fitting at this time for our consideration, and I hope every man present will at this meeting abide by this advice.

The honor that came to me from the members of this association has been highly appreciated. I will try to do my duty as your presiding officer conscientiously; and whatever failure you may note in the discharge of the duties of my office, will, I trust, be viewed with leniency.

The preparation for this meeting necessarily depended upon your secretary and executive committee. In behalf of the association I thank them for their faithful work. You have a special committee on local dental societies and legislation that I recommend to be a standing committee. I know they have done fine work this year. There is important work for a legislative committee. *Our present law is good and should be zealously guarded*, yet there are points that ought to be strengthened, and statutes added relative to appropriation for an appointment of a dentist for the care of our State wards, the blind, insane, and poor. I wish I had time to discuss this important need; however, I will say that because of the neglect to care for the teeth of these unfortunate people, the financial burdens of the state are increased rather than decreased. The celebrated Dr. Osler says that diseased teeth are responsible for as much physical degeneracy as alcohol. A dentist recommended by our association and appointed and supported by the state could not only do this work, but could give time to

*Read before the Kentucky State Dental Association, May, 1909.

dental inspection of our public schools and deliver short addresses to children and teachers. It can be demonstrated that inspection of school children's teeth by a competent dentist is more important than medical inspection, and I wish I had time to give you more proof and enlarge upon the work.

At a meeting of the New South Wales Dental Association, a paper was read on the result of inspection by a dentist of the teeth of school children, and it was found that 73,708 teeth were examined. Over sixteen per cent of the permanent and twenty-four per cent of the temporary teeth were carious. Ninety-four per cent of the children had decayed teeth.

The dental clinic of the Children's Aid Society of New York City made its first report two years ago, in which it stated that improved health and consequently better work in the class rooms was the result shown by several hundred pupils because their teeth had been properly cared for in the last year. The report also stated that all of five hundred and ninety-four children, whose teeth were examined since the clinic began its work, needed attention for their teeth. The improvement in the general health of the children whose teeth were cared for was so marked that preparation will be made to care for the teeth of fifteen thousand pupils in the society's twenty industrial schools. The care of teeth of our state wards is left to the judgment of the superintendents who may expend small amounts in that direction.

About one half the states make definite appropriations for dental services. We make provisions for domestic science, athletics, and manual training in public schools, and little instruction, if any, is given to the importance of the care of the teeth. This old and important question of dental instruction and examination in our public schools, I think can be successfully worked out by our legislative committee, getting the legislature to make such laws as will permit the appointment of a state dentist who could do this work without the serious objections that have been in the way of doing this work by other methods. Therefore I recommend that our by-laws authorize a legislative committee.

We have not in the past demanded that our various committees make an annual report. In fact, little work has been accomplished by committees except that of the executive; whereas all of the committees have fine opportunity to do effective and lasting work for the public and Association. The press committee should be active during the year distributing literature through the press pertaining to dentistry, magnifying the importance of dental meetings by press notices. This should not be spasmodic, but continuous. They should use the pamphlets recommended by the National Association, and other matter of like nature.

The Ethical Committee could, by clippings from state papers displaying dental advertisements for our inspection at annual meetings, intimidate the quack tendency of any member. Those cases that require investigation ought to be kindly but firmly held to account for their unethical practice.

They ought to consider dental schools, and the faculty who are members of our association ought to be dealt with for unethical practice of their infirmaries.

There should be close relation existing between our association and dental schools; because the schools can exert more influence upon the dental profession than all we as an association may do. The ethics and training of the school today places the standard of ethics and proficiency of the dental profession of the future. If any of us are prejudiced against schools let us lay aside this prejudice and become interested in the school, because we can in no other way better advance our profession.

In accordance with the above suggestion I invited the Louisville College of Dentistry to present the technique work of their students in our clinic room; and I am sure you will be interested in inspecting the same.

The membership committee should solicit all ethical dentists to become members, also make it manifest, no matter how low any have fallen into quackery, that we are ready to receive them if they will in the future abide by our code of ethics and are repentant for their past conduct.

The committees on dental science and literature, dental art and invention ought to make interesting and instructive reports. In fact all the committees have more or less important work.

In order that our committees may know their duty, I recommend that our by-laws state more specifically the duties of each committee.

Some of our clinicians and committeemen in the past have failed to do their duty. I, therefore, recommend the following by-laws:

The names of each officer, members of all standing committees, clinician, essayist who are members of the association, shall be called, and the president shall pass on the work of each, or refer said person or persons to the ethical committee, and said committee may, after trial, fine, suspend or expel, or acquit the person or persons investigated.

In order that your committees may be more effective, the chairman of all standing committees ought to be reappointed for two consecutive years, and it shall be his duty to call the new committee together, turn over all correspondence and committee's annual report to the chairman. A new chairman shall be elected by the new committee.

The work required of your state board of examiners is the most important of any connected with the dental profession. There have been differences of opinion in the board that has prevented good work being accomplished in enforcing our dental law this year. The board has authorized me to present the following resolution:
May 15, 1909.

Be it resolved that, We instruct the President of the Kentucky State Dental Association to state to said association at its next meeting that the members of this board are willing to abide by the by-laws of said association so long as the said board is represented on the committee to formulate, or to amend, such by-laws, and that we, the undersigned members of said board,

are willing to lay aside any personal differences existing within the board and to try as best we can to see that the dental laws of Kentucky are executed to the best of our ability, and, further, that the secretary of said board make a report to the Kentucky State Dental Association and to the Governor of said state as ratified by the said board.

We agree to all this in good faith.

Signed by

C. W. MCGUIOR, *President.*

J. W. JUETT.

J. RICHARD WALLACE, *Secretary.*

C. R. SHACKLETTE.

F. R. WILDER.

In view of the opinion of the attorney of the state board of dental examiners I recommend this by-law:

The men recommended by the Kentucky State Dental Association for appointment to the state board of dental examiners must agree, in writing, that they will abide by the by-laws and do all in their power to enforce the will of the state dental association as to the management of the state board of dental examiners. The secretary shall enforce this by-law before submitting the name to the Governor. The board must have the cooperation of the dentists of the state if effective work in prosecuting the dental law is accomplished, therefore let each one of us do all we can to help the board in this work.

The Kentucky State Dental Association stands for the best interest of the public and profession. It is responsible in a large measure for whatever progress has been made in the past. Whatever may be our opinion, or the faults of the association, there is nothing that can take the place of the association. If we would advance and be worthy a position among professional men, we must be interested in the welfare of the state association. Therefore, I hope we may adjust our differences and do all in our power to advance the interest in the association, illustrating the seal of our beloved state, brother clasping hand with brother, ever remembering the great truth—"United we stand, divided we fall."

YOU can not place men behind whitewashed walls, black steel bars, amid gravel yards, and expect them to come out better than they went in. The only way you can reform a man is to make him feel that he is worth something to the world.

SHADES AND SHADOWS*

By E. M. Kettig, M. D., D. D. S., Louisville, Ky.

THE title of this paper smacks somewhat of the mysterious, for you could form no definite conclusion as to what my treatise would be by the title. When we speak of shades, we may mean the shades of some of our departed brother dentists, which might appear before us at times to remind us that Old Father Time would gather us in some day soon, and that we had better be good, so we could have a good time in the hereafter.

When we speak of shadows, we may mean that some of us may have to work so hard that we become mere shadows of our former selves, and then not accomplish much at that in the way of saving up a great deal of this world's comforts in the shape of wealth.

But my paper does not deal with any of these gruesome questions, but confines its remarks strictly to teeth. However, before going into the subject matter of the paper, together with the motive for writing it, I wish to thank the Committee of the Fall's City Dental Club for selecting me as the representative of the Club, for I deem it an honor and privilege to appear before this scientific association, and in my humble way add to the success of the meeting.

My motive for writing this paper was prompted by observation of artificial work in the mouths of many of our patients, by effects of various filling materials upon the color of the teeth, and a higher regard for the blending of shades in enamel and porcelain fillings.

In the selection of artificial teeth many of us often fall into ruts, as it were, for we select the same colored teeth for every case. The same rule holds good with porcelain and enamel fillings. We find ourselves always using material out of the one bottle, and when that is gone we go to the next bottle, and seem to be just as well satisfied with our work. Over at the dental depot the other day one of the clerks told me they had one dentist as a customer who bought a large number of teeth. He had gotten in the habit of using a certain mold and numbers 3 and 4 in color of Justi Shade Guide. As a consequence they were always low in their stock of these teeth. So they ordered quite a lot of the kind he had been using and about the time they arrived he changed his mind and began using other colors and molds.

Where some natural teeth remain in the mouth, and we are about to supply some that are gone, we have a fairly easy time to do so, for we have the natural ones to help us along, but in Edentulous arches we must depend, to a large extent, upon our experience and judgment as to what would harmonize with the physiognomy of the individual; age and sex play a part as to the color of teeth or the shades, as well as the general mold. Temperament plays the part of the greatest physiological factor in the selection

*Read before the Kentucky State Dental Association, May, 1909.

of the shades of teeth, and we should all be able to judge in a fairly accurate way, as to just what shade to select, by our knowledge and observation of the temperament of the individual we are dealing with.

There are four basal temperaments, as they have been classified by physiologists, and the underlying color of the teeth in all is yellow, but this yellow shade inclines to some other color in each of the four basal temperaments. In the bilious, we have yellow inclining to the bronze or deeper shade. In the sanguine, we have yellow inclining to the cream or lighter shade. In the lymphatic, we have yellow inclining to the grey, and in the nervous we have it inclining to the blue.

Now, in a paper of this scope, I could not go into a description of individuals characteristic of these basal temperaments, as it is to be presumed that we are familiar with them. Then again, they are seldom found as single temperaments, but as binary ones, with one of the four classes acting as the basal.

The close relation existing between the teeth and other features of the face make it important that they should be in harmonious correspondence. In nature there is observable a sort of harmony in the various physiological characteristics of each individual. There is also a general relation between the color of the teeth and that of the other pigmented tissues of the body. From infancy to old age a gradual succession of changes in the bodily tissues occurs. The chief alteration, which may be attributed to the influence of age, is a deepening of the color of the teeth. This is a molecular change and is physiologic in nature. It occurs most strikingly in individuals of the bilious and sanguine temperament, the yellow shades of whose teeth are markedly deepened. This change amounts to two or three shades as measured by the shade guide for artificial teeth. It occurs also to a lesser degree in the teeth of the nervous and lymphatic. We should, therefore, use due regard of these facts in the selection of teeth for persons past middle life, and a proportionately darker shade selected to correspond with age.

The color of teeth in general is due to two things. The intrinsic color of the enamel and dentine, and their proportion and distribution in a given tooth. This is in accord with the other pigmented tissues of the body. It harmonizes with the color of the hair, the eyes, and in particular with the color of the skin. This latter is of greatest importance in determining the color of the teeth. Ivy has said that the complexion is of great importance in determining the color of the teeth. Joseph Head has stated his belief that the fundamental color of the skin over parts of the body protected from the sun, and that of the teeth is the same, and that if the pink element in the former, due to the presence of the blood, were removed by pressure upon the part, the color of the skin thus observed should be the fundamental color of the artificial teeth. I have not observed the skin of my patients quite so closely, but no doubt some of us would not mind to try the experiment even if we reached no definite conclusions.

The state of organization has much to do with the color of the teeth.

It is certain that the greater translucency of the enamel in the nervous temperament is a result of the high organization, and accounts in part for the blue cutting edge characteristic of these teeth, while the opaque enamel of the teeth of the lymphatic temperament is commonly observed to be of poorer structure.

The proportion between the enamel and dentine also is related to the color of the teeth. In the typical lymphatic temperament, for instance, the opacity of the enamel and the fact that it is generously backed up with dentine, partly accounts for their color, while in the thin teeth of the nervous temperament the enamel plates at the cutting edges of the incisors enclose but little or no dentine, permit the light to be carried through and appear blue at this point. The yellow color observed at the necks of teeth is due to the thinness of the enamel at this point allowing the underlying base or dentine to show through. As age advances the shades of teeth begin to deepen, due to a molecular change and they are darker in middle life or old age than they were in youth.

The fact has been brought out by E. A. Royce, after a careful examination of a large number of natural teeth, that the individual members of any given natural set vary much in shade. The upper central incisors are the lightest, the laterals are darker and the canines are darker still. The first bicuspid is generally lighter than the canines, and the second lighter than the first. The first molars do not vary much from the shade of the bicuspid. Shades for artificial teeth should be taken at the time the bite is obtained, and the trial shade should be actually tested under the lip or in the mouth, because of the shadow cast by the latter. The teeth will appear lighter in the mouth. The same shade guide should be used at the dental depot for the selection of teeth for there are slight variations in the shade guides themselves, due to detail of moulding and burning, and these differences occur in the sample teeth of the shade guide.

A very natural effect is produced by selecting centrals of different sets, thus breaking up the unnatural uniformity in color observed in the stock sets. Slightly darker canines usually give a natural appearance and slightly bluer bicuspid and laterals will add to this.

It has been said of the late Dr. Bonwill that he would visit the large display rooms of the S. S. White Company, in Philadelphia, and spend two and three hours making a selection of artificial teeth for a given case. He never used a set as put up by the dealers, but selected each tooth singly. If a man with the wide experience of Dr. Bonwill would devote such long time to the selection of a given case of artificial teeth, how should we feel ashamed of ourselves when we become impatient when we do not find a set to suit our fancy in so many minutes.

Dr. J. W. White in the American System of Dentistry says:—"What is needed is such an appreciation of the law of correspondence that the dentist can cipher out by the rule of three the character of teeth required

in the case of an edentulous mouth, with the same precision that the comparative anatomist can from a single bone indicate the anatomical structure of the animal to which it belonged. The probability is, that in many cases, perhaps in most of the cases of artificial dentures, the fault is not in the carelessness or indifference of the dentist, but in his failure to recognize the requirements of temperament.

A certain family resemblance to each other in a set of teeth is considered essential, but the adaptability of the set as a whole to a given case should be esteemed of even greater importance. A set of teeth in which not only the relative length and breadth, but every line and curve characterizes it as belonging to a certain temperament, may be made of a color never found in nature connected with such forms. Thus are seen repeatedly such incongruities, as the associations of the massive tooth of the bilious temperament with the pearl-blue color of the nervous temperament, and the long narrow tooth of the nervous temperament with the bronze-yellow color never seen in any but those of a bilious temperament, showing that the laws of correspondence had not been sufficiently observed. The first study of the dentist, when proposing to replace a lost denture, should be how to restore the natural appearance of his patient, and this can only be effected through an appreciation of the temperamental characteristics, and the law of correspondence or harmony. Age and sex may somewhat modify the requirements in a given case, but the basal fact on which he should proceed is temperament. A failure to recognize its demands will result in failure from an aesthetic standpoint. A knowledge of the distinguishing characteristics of the various temperaments and the style of teeth which conform to nature's type in the physical organization, mark the difference between the dental mechanic and the dental artist."

Of course, in the various selections of shades for artificial teeth the dentist is not always given full power to act upon his own judgment, and his patients' wishes in the matter should be consulted and respected, and if within reason complied with. The patient pays for the work, and is entitled to consideration. My patients have at times made such remarks as these, "I have had dark ugly teeth long enough, now give me some pretty white ones," and by complying with the patient's wishes, to some extent, and at the same time telling them that no one has white teeth, but that you would give them teeth as light as their physiognomy would permit, you make a more lasting friend than if you arbitrarily give them something they do not like, but that you think is the right thing.

Now about fillings in our natural teeth—the drift of our work is toward natural appearance. The gold filling is doomed forever, anywhere in the field of vision, and while many gold fillings are still inserted and will be for a long time to come, we must admit that the inlays and improved cements and enamels are rapidly taking their place. Gold fillings when small in proximal spaces often deceive the observer as to what they really are, and while in many cases they are highly finished and polished, a shadow

is thrown out, due to the fact that they are under the lip, and only on close scrutiny are they discerned, often appearing as decayed places instead of fillings. Cement fillings can be properly shaded and blended with tooth colors very artistically, and with the variety of shades sold by each of the manufacturers we are enabled with any of the different brands to place some very artistic fillings of this material.

Here again comes in the question of temperament, and the heavy massive teeth of the bronze type will appear more natural filled with cement than the delicate, highly organized, clear, translucent teeth of the nervous type.

Porcelain inlays have had their say in the last few years, and cosmetic effects have been discussed at length. Shades and shadows both play a very important part in the pleasing or displeasing effect that we expect to make. Certain positions of cavities yield more natural results with fillings than others. On the labial surfaces of teeth, thin in enamel close to the gum line where the dentine is quite yellow and not much translucency exists porcelains are easy to match in shades. On the corners of colorless teeth, and by that class of teeth I mean where the dentine toward the incisal edge attenuates itself to almost nothing, and the two slabs of enamel come down to that surface of the tooth clear and translucent, we have a bluish cast about them which upon examination is nearly colorless. I say on these corners if you get an inlay to appear natural, with the right shade properly baked, and the shadow due to the lip properly calculated, you are some pumpkins as a dentist.

The cement you use for setting your inlay has much to do with its cosmetic effects, and an otherwise beautiful porcelain inlay may or may not be spoiled in its match in shade to the tooth by the color of your cement. I remember two inlays that I inserted, side by side, in the labial surfaces of two central incisors. Conditions were similar in each and results were about alike. In about a year one of the inlays came out, as they have a cute little knack about doing occasionally, and my patient brought it in to be recemented. I used a little darker cement by mistake in the setting, and the result was that my two inlays were no more the same color, although they had been at the first setting.

Shadows have as much to do with the natural appearance of inlays as the proper selection of shades, and often when the lips are wide apart and we directly look at an inlay it appears well, while a casual glance from the side with the lips more or less in repose produce a different result.

Artificial enamel, our latest acquisition in the category of filling materials, in my hands has been so uncertain in its results that my opinion of its merits rises and sinks almost as often as I see what time has effected in the way of its wearing qualities. One day I am tempted to swear off from its use, and then I see it in another case wearing so nicely that I am charmed with its results. In my hands its color does not hold faithfully and true. It seems to grow darker with time, and I am not using the dark

shades that I did a year ago. I do not even use a shade near that of the natural tooth, but several shades lighter and allow the shade of the enamel to grow into that of the tooth. Instead of using 5, 7, 10 and 9, as I used to use and which certainly were natural in appearance, I am now using 1, 2, 3 and 4, and while these colors are some lighter than our own teeth, as a rule, I have found that in six months they appear more harmonious.

Shadows are not so manifest with artificial enamel fillings as with other materials, for the material is somewhat translucent itself, like the tooth structure and the blend is more in harmonious relation.

DISEASES OF THE GUMS AND PERICEMENTAL MEMBRANE*

By Doctor Herbert Newman, Versailles, Ky.

IN the subject that I present to you I propose to direct your attention from the restorations of the dental organs, made by the manipulative procedures, evolved by the study and thought of the dental profession the last one half century; to restorations made necessary by the pathological conditions of tissues, whose mortality table foots up 50 per cent of the total losses of the human teeth—the gums and pericemental membrane.

I do not wish to lessen your ardor in any line of work of our profession, but I wish to stimulate a study—awaken you from what I fear is a relaxation in practice of the importance of restoring to health these tissues—the foundation of the dental organs, whose pathological condition called to life the dental profession—whose first age and mission was “to make teeth,” whose second age and mission was “to make sound teeth,” whose third age and mission is today “to save sound teeth,” a noticeable condition in all these diseases of which I will speak.

The dental profession exists because of its service to humanity, and in proportion as it enlarges these services, will be its “honors and rewards.” In my subject I see a field, that is capable of greater enlarged services to humanity and greater honors to those of you, who are here today for a study of its advancement.

I propose for you to hear me also on *your own* behalf, as well as on the behalf of the public, for I know that the laity does not realize the ravages of these diseases, until the dental organs are on the move—too late, many times, for successful treatment. And what I have to say to you is so to train yourselves to forcibly impress your patient with the seriousness of these diseases before beginning an operation, that where you have been receiving \$50 for a bridge or \$10 for restoring a crown, you can receive proportionately proper remuneration for preserving a natural tooth or natural teeth for life.

In one case in practice, a young man whom I knew very well, strong

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and healthy, would not listen interestedly to me about the diseased conditions of these tissues in his case. I was at work at the time for his mother, I talked to her about his negligence, and what the inevitable consequences would be. In a few days he returned, and has been keeping his engagements since. But he told me that after his mother told him what I had said, he went to his room and took to his bed, and on inquiry as to why he was in bed, he replied that it made no difference, as "it was a matter of only a few days anyway."

If this patient had had only one labial pericemental recession, I should have made a special engagement for that one case, rather than to have "sorter throwed in the treatment," and spent some of his time in a conversation at the chair about the nature of these tissues, and the necessity of constant care, as it signified the predisposition to the disease. I find a splendid method of conducting this class of treatment is to devote a certain day of the week to these diseases, it amounts to specializing in this work.

I find the disposition of the general practitioner of dentistry, and authors, judging from current magazines and text-books, is to degenerate into one generic name for all these diseases in which an irritant is present, because they usually terminate in flow of pus and loss of teeth.

I do not believe in names to confuse, but to clarify, and by close observation we will find that different tissues are involved, and that by differentiation in the diseases we can differentiate in treatment, enabling us to render more effectual treatment.

Now to mention the causes of these diseases is but to invite a discussion. But I can not pass it by, for to be most successful in their treatment, we should know the cause, and remove it, before too many tissues have been destroyed, to stimulate the osteoblast, the fibroblast, and cementoblast requires activity on our part, and strong therapeutical agents, but the osteoclast, fibroclast and cementoclast are active on their own part.

The causes of these diseases are, First, *manifestations* of constitutional disturbances, and constitutional diseases; as is the case in acidity of the stomach, in diabetes, pregnancy, all genito urinary diseases, typhoid fever, nervous diseases, drug poison. In all constitutional diseases, there is a marked change in these tissues, the same as in the tongue, and the day will come when the physician will attach enough importance to these tissues to require a visit to a dental surgeon to know that they are restored to health, and cleared up, the same as he expects of the tongue.

Second, Irritants, whether they are the effects of the preceding, or in the form of deposits, or any foreign body.

Third, Degeneration of cell tissues. In many of these cases, the causes are so closely associated and combined that it requires close observation for proper classification. Under the last named causes, I will include such diseases as hypercementosis, exostosis, labial recession of the pericemental membrane, phagadenic pericementitis.

Under the second, or Irritants, I will include salivary calculus, serumal

deposits, and under the third cause I will include gingivitis and what I have chosen to designate marginal alveolitis. I have never seen but two cases of the latter. There is a marked infection, excessive pain, profuse saliva, gingiva whitish, a complete exfoliation of the terminal tissues of the alveolar process of nearly all the teeth: the inflammation extending up on the buccal tissues, especially over the third molars.

In one of these cases I learned that it was an infection from carrying nails in his mouth while plastering.

Now, a few remarks on treatment. If acute local inflammation exists, don't try to work with these tissues until it is reduced, and superficial resolution begun. A spray from the compressed air outfit—and there is no excuse for any man, city or country practitioner not having a compressed air outfit—is most effectual.

A mouthwash such as you will find in prescription No. 1, for the patient's use, is pleasant and effective, it compounding into a bland, soothing, stimulating, detergent wash. A splendid topical application to allay the pain you will find in prescription No. 2.

After you have reduced the inflammation, before commencing the removal of deposits, prescribe a mild astringent mouthwash, after removal of deposits from 2 to 10 days, a stronger astringent wash should be used, always mindful of the fact that over stimulation will prohibit granulation.

Prescription No. 3—I can not pass this without saying that any man of you who knows a parent to be affected with these diseases should be mindful enough of hereditary tendencies, to always suggest for the child a mild vegetable astringent and stimulating mouthwash for continued use, if he wishes to give his clientele that careful attention that is a practice builder as well as a practice retainer.

I believe all these diseases are amenable to treatment where the orthodox instrumentation of removing the local irritant is thorough. But the words of Dr. Patterson in Johnson's operative dentistry are strikingly forcible in closing this paper, "No sane man can rely upon cures in any and every dental pathological condition with an absolute precision, nor can he promise that when a cure is brought about, it will be permanent, for always a disease will again be reproduced when like conditions environ which produced the original lesion. But the chances for relief to the sufferer are as promising and as positive in these diseases as the relief and cure following the process of filling a majority of carious teeth."

Prescription No. 1.

Benzoin, grs. j
 Boracic Acid, grs. xx
 Menthol, grs. v
 Thymol, grs. v
 Camphor, grs. x
 Alcohol, 3j
 Glycerine, 3j
 Oil Lavender, m. v

Caromel and Chlorophyl solution to color.

Aqua Dist., q. s. $\bar{5}$ iv

Sig. Mouth wash to be used as directed.

Prescription No. 2.

R

Carbolic Acid, $\bar{5}$ ij

Camphor, $\bar{5}$ iv

Alcohol, $\bar{5}$ j

Sig. To apply to painful parts with swab.

Prescription No. 3.

Zinci Chlorid, grs. x

Boric Acid, grs. x

Benzoic Acid, grs. j

Chloroform, m. v

Tint. Cudbear, $\bar{5}$ ss

Alcohol, $\bar{5}$ j

Glycerine, $\bar{5}$ j

Aqua Dist., q. s. $\bar{5}$ iv

Sig. Mouth wash, held on gums 2-5 minutes, three times a day.

DENTISTRY IN EASTERN KENTUCKY*

By Dr. R. H. Leete, Presotnburg, Ky.

THERE is a portion of Kentucky, that, until within the past few years, has been almost as unknown to the rest of the State and the country at large as though it were in some remote part of a foreign country.

If you will look at your map, you will find the Big Sandy, Licking and Kentucky rivers have their sources near each other. The counties near the head-waters of these streams are a part of the region of which I speak. Pike County in the extreme south-eastern corner of the state was the scene of my first experience. Pikeville, the county seat, was at that time sixty-five miles from the nearest railroad, and was reached during highwater by steamboat, and the rest of the year (which was about nine months, as a rule), by stage-coach, and over as rough a mountain road as could well be imagined. The nearest supply house was in Cincinnati, some three hundred miles away. At the time I speak of, the Hatfield-McCoy feud was in full swing, and the whole neighborhood was either in arms, or in fear. I was the only dentist in that whole section, Pike, Floyd, Knott, Magoffin and Letcher counties, and my services were in demand by all parties. Often I would be sent for to make a set of teeth for a member of one faction, and my next patient would belong to the other, but by keeping my mouth shut, I kept out of any trouble of any kind, and found the people the most hospitable I ever was thrown amongst.

The counties that border both West Virginia and Old Virginia have many lawless people in them, owing to the ease with which they can dispose

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of their moonshine and cross the line and avoid arrest but I am leaving my subject.

To begin with, school facilities in this region have been very poor, but at present every county has a good school operated by some religious denomination, and the effect is being more noticed and marked every day. The older generations, as a rule, are densely ignorant as regards hygiene, and as to care of the teeth, never thought of such a thing. My great struggle has been to get them to realize that the teeth could be saved. At first almost my whole work lay in extracting and making rubber-plates. Then came the day of the gold crown. I have had a young man to ride horse-back thirty miles to get a central incisor crowned in gold, and have had more than one want a perfectly sound tooth "kivered," as they express it.

Education, however, is telling at last; perhaps the advent of new people is also having its effect, and now children are coming regularly to the office and are taking the same care of their teeth as are the children of the cities. There is a dentist located in every county seat now, and in some of the larger towns, several. Pikeville has four, one lady having ventured that far. To a man who has always practiced in a city, work in a region like this would seem to offer difficulties unsurmountable. No water, gas, electricity or supply houses. Before the Turner gasoline torch was on the market I made all my bridges with a mouth-blow pipe over an alcohol flame. How would some gentleman present feel, to be expected to pack enough of an outfit into a pair of saddle bags to make a rubber-plate—vulcanizer, oil stove, hand-lathe, plaster, wax, impression trays, teeth and rubber, besides a set of forceps and a head-rest for a chair—yet I have done it hundreds of times and many an old lady is now masticating her food as comfortably on the result of those trips, as though she had had every advantage of a city dental office. A man must be original, to say the least, to make a success under these trying circumstances. One practicing in these remote places must of necessity carry quite a stock of supplies, and then is often compelled to make odd shifts. It is an every-day occurrence to make cuspids of laterals, and molar facings of centrals and visa versa. Ink and sweet oil make a separating media that will work, and the broken point to a gold pen once made a molar shell that has done service the past seven years. It used to take eight days to get a return from a letter to Cincinnati, so it was hardly practicable to patronize a laboratory.

Ignorance has been the greatest handicap to be conquered in this section. A certain religious sect whose numbers predominate have peculiar teachings. Often an old couple will come in—the old lady wanting new teeth, but the man afraid it would be flying in the face of Providence. The only argument you can give those cases is to take off their glasses (they nearly always wear a pair) and ask them to show you the difference between eating and seeing.

These people are the direct descendants of English and Scotch-Irish

ancestors. The names, odd customs, old-time songs and folk-lore tales all bear witness to this. In some of the back counties off the railroad and the navigable water courses, you still see the spinning-wheel and old loom. The women nearly all smoke, and many dip snuff. The effect on the teeth can well be imagined. The stick used in snuff dipping, wears a groove, and the first bicuspid and cuspids are generally the teeth that suffer. Pyorrhea is almost omnipresent, but it is to be hoped the next generation will correct all this.

There is another peculiar habit among some of these people—that of eating clay. Just what the chemical composition of this clay is I do not know, but whole families became addicted to the habit and the effect is awful. They became a sickly, yellow color, and their teeth die from pure inanition. I have seen several of their mouths, and their gums always have a bluish rim next the teeth, which are always loose and very yellow.

I would not leave the impression that the whole region of which I speak is made up of the types I have mentioned, for that would be wrong, and I may have left a bad impression for the whole country, which I do not mean to do at all, for there are some of the best people on earth in Eastern Kentucky. The towns are becoming modern and the people are waking up to new industries and the march of progress is seen everywhere, and development spreading rapidly. These are merely some of the conditions among which I have practiced for nineteen years.

DISCUSSION

DR. P. H. WILLIAMS, Ashland, Ky.. I have often made plans to attend the S. D. A. but heretofore my plans have failed, but this time having determined to be present I was surprised to learn that I had been selected to discuss a paper by Dr. Leete; knowing the Doctor as I do it came somewhat as a surprise. I became worried, thinking possibly he might select some of his pet theories or appliances, but on being informed that no deep scientific paper would be presented, why, I felt better, but not at ease; never at ease—standing. However, I am delighted to be here and feel sure that all future meetings will be increased one by my presence—sitting.

On listening to the Doctor's paper and seeing the author, we could hardly realize that so young a man is today the pioneer dentist of Eastern Kentucky. The essay is very interesting, inasmuch as he gives us facts that he confronted some twenty years ago. Having had experience in his section, learning the past and knowing the present, I am delighted to say that the Doctor has accomplished great good, and, gentlemen, his days of usefulness are only beginning.

The essayist has nicely pictured conditions that have existed, but his modesty forbade him giving the present. While I am in a community with modern conveniences, I have been well schooled in rural dentistry, not only after graduation but before.

Why, gentlemen, only a few years back, and even today in some sections, the need of a dentist is so great you have but to hang out your sign or tell some good old sister and the news will soon be spread over the entire section that a *tooth dentist* is at a certain crossroad. Then the curious come, some to see, others to feel, to their satisfaction.

Some parts of the Doctor's paper might leave a bad impression of the people, which I assure you he does not intend. The people today in the remotest sections thoroughly appreciate the value of preventive dentistry over that of destructive, thereby avoiding the inconvenient and uncomfortable rubber plate. They no longer insist on

extraction as a cure, and those teeth they have lost are nicely replaced with bridge work, which today, in the mountains, is very popular.

Only a few days ago a supply man made mention of the fact, when he first went on the road, some forty years ago, our home town, Ashland, was but a dot, and not till some ten years later did he think of stopping, till Dr. Dibble began the practice of dentistry from house to house. Today, gentlemen, we have ten registered men in Boyd county. We have supply men—yes, plenty of them. Our communications require only twenty-four hours till our wants are complied with by our dental depot.

While the big Sandy Valley is not visited by supply men, it is only a matter of time till the dentist of that region will be supplied the same as we are.

Now, gentlemen, to the defense of the mountain dentist—the man under difficulties! In the first place I bring censure to our godfathers—you leading practitioners of the state, you members of faculties of our colleges, you took us *green*, fresh from the country; yes, with the smell of autumn leaves you educated us, but no longer remembered your obligation. You left us to fight the battle, to battle with ignorance and hardships as the essayist has told you, not caring for our future; not caring whether we were heard from or not; but we are still fighting, and, contrasting the past with the present, we are winning.

You still hold your State Association in your larger cities of this section of the state. It does seem to me that an inconvenience once in a life time, for Eastern Kentucky, would accomplish much good. As you will not come to us we have and are coming, not to you, but to take a part and be benefited. Right here I want to say for the satisfaction of those who do not know: You have one man I want to exempt from this neglect, that is Dr. Tileston, of Louisville, who came all the way down to Ashland, almost missed our meeting, not knowing of our customs, and gave us a rousing good heart-to-heart talk that was greatly appreciated and made us feel that some one of this section was really anxious about the advancement of dentistry in the eastern and mountainous section of the state.

Now, gentlemen, you men surrounded with all your electrical appliances, water power, gas, etc., no doubt look with pity on the rural dentist, and no doubt you do sympathize, but he doesn't need it. Every crossroad dentist has a casting apparatus, usually his own device, for casting inlays, crowns and bridges. While you are using your \$100 machines for casting, obtaining beautiful results, he, with great difficulty, is obtaining similar results.

The same applies to other work. Step into the office of a mountain dentist, and no doubt the operator will show you a beautiful porcelain crown he has just completed, and will tell you he has a patient tomorrow for porcelain restoration. So you see the people keep pace with the skill and teachings of a progressive dentist.

Just a moment and I am through. About four years ago a so-called city dentist sent posters broadcast, saying that he would be in some of the leading towns along Big Sandy River to extract teeth under nitrous oxid; luckily he investigated, and to his surprise he found that those fellows up in the country actually bought gas by the tank at dental depots the same as he, so it is needless to say that the city man failed to put in his appearance.

And, again, step into his office, there you will find nice equipments and very noticeable will you see the leading dental journals on his reading table. In conclusion, gentlemen, I desire to say you will ever find the mountain dentist able and ready to discuss all late appliances and methods, with great anxiety for the advancement of Humanitarian Dentistry. Thank you.

COOPERATION*

By Dr. Max M. Eble, Louisville, Ky.

EDISON, when asked the secret of success, replied: "Live like a hermit and work like a horse." While that may be good advice for a genius, since most of us are only endowed with ordinary talents we are obliged to pursue a different course. To make our calling a success, we must not be easily discouraged, for great achievements have not been the result of one individual mind, but by a combination or cooperation of numerous intellects with a large percentage of *only* the average kind. While it is necessary that there *must* be leaders or directors in every organization, it must be borne in mind that the private in the ranks is *really* the "man behind the gun" who is responsible for the success of an engagement. Why do we need Dental Associations? Sixty years ago dentistry was but the acquiring of a trade, while today we are brought in contact with the artist, the modeler and the sculptor. To diagnose the ailments presented to the dental surgeon, we must have knowledge of physiology and pathology, and to properly treat them, familiarity with materia medica and therapeutics. Dentistry dragged along for several generations, with an effort here and there, with but little progress, professionally, until Drs. Chapin A. Harris and Elezar Parmly took it upon themselves to create an atmosphere where the very air that was breathed was fragrant with dental knowledge. When one shows especial talent in music, he is sent to a conservatory where there is an atmosphere of music, as is done when other talents are to be cultivated. This professional atmosphere created by Harris and Parmly was through a dental society, whose blossom was a dental journal and whose matured fruit was the Baltimore College of Dental Surgery, the first, and for five years the only dental college in the world. Did they have any obstacles to overcome? They had first hoped to have a dental school as a branch of the University of Maryland, but when they made application to the faculty of the Medical Department they were told that dentistry was of *too little importance* to require a college training. To these two men we are very largely indebted for the fact that we are now looked upon as professional men and a *distinct branch of the healing art*. Every advance that has been made in dental surgery rests on a single foundation—The Dental Association. Sweep away every dental college in the land and new ones will be established—by what? Dental Associations. But take away Dental Associations. How long would colleges last? Our forefathers worked hard and earnestly for that which we inherit, and we would certainly show little appreciation if we did not add to that grand heritage. A dentist may be good, honest and conscientious and not be a good citizen, for a good citizen is one who not only absorbs all that is possible, but who goes out among his fellowmen so that others may be impregnated with his talents, of whatever character they may be. Nothing so polishes the intellect as the contact of

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mind with mind, and awakens in you the consciousness that others know as much or more than you; and unless you expect to fall by the way-side you must get out of the rut so well worn, and strive for the ideal, which cannot be done *single-handed*, but by communing with your fellow practitioners. The principal function of every dental association is the betterment of service rendered the people of the state. The dissemination of new methods and ideas and new discoveries is too meagre in our state, as less than thirty per cent of the total number of dentists are members of our state society, which is too small a percentage for any united action on matters of importance to our profession and the public. Eight years ago, in Bowling Green, the theme of my paper was the organization of local dental societies as branches of the state or parent association. Two years ago, as president of your state society, I elaborated on the same subject to such an extent that a committee was appointed to further this work, and an annual appropriation of one hundred dollars to meet necessary expenses was made. The plan we have adopted is, with some modifications, similar to the one of the Illinois State Society, which, in the course of three years, increased its membership five-fold. It might be called the lodge system of organizations, there being a number of local or component societies which represent subordinate chapters, and these together constitute the State Society, or Supreme Lodge. The most important feature of the plan is to have the state society composed of a number of component societies, each of which shall have jurisdiction over a certain territory. All members of each local society should be members of the state organization, and the dues paid to the local society cover both the local and the state, so that one could not be a member of one and not the other. Each local society represents the state society in its territory, and should pass upon all applications for membership from men within its jurisdiction and have the power to expel members. The territory of these component societies, in most instances, at least, is small enough, in that the practitioners are moderately well known to each other, and for that reason, are better qualified to pass upon application from their section than a committee from the state society could be. While even with this plan some undesirable member may be brought in, correction can and should be made by expelling the same for violation of the Code of Ethics. Under such conditions men are soon united in the bonds of good fellowship, and realize that by working together they can accomplish many things otherwise impossible. They act as a unit for all things which will improve dental service in their respective territory. The public also takes cognizance of these facts, that dentists as professional men are working together for the good of the community, and dentistry stands on a more elevated plane. Great interest can be aroused by this plan, and as has happened in other states where in some localities each man's hand was raised against every other man, and where ethics was a stranger, good fellowship will prevail, and a united effort will result in the betterment of local conditions and the advancement of our calling. Those of the profession who

attend only the state society do not have an opportunity of keeping in touch with, especially, the new things continually being evolved, and for that, if for no other reason, should belong to a society that meets not less than four times a year. Too much work and no play makes Jack a dull boy. Bear this in mind, and when organizing your local society also develop the social side, for it is a well-known fact that those having the social side well developed have resulted in the most good to the profession. In these societies there is a better opportunity for personal acquaintance, there is a sort of family feeling which takes away the reserve and diffidence to one not accustomed to taking part or speaking before an audience. To keep apace with our kindred professions we must have thinking, studious and industrious men, and in the local association you will find a veritable training school to that end. The mere fact that societies have been formed and failed in your section should be no bar to renewed efforts. If we expect to succeed in life's struggle we must accomplish what others have failed. Jealousy and envy are your greatest obstacles, and as in all other organizations, professional, political, civil or religious, a few men must do a lion's share of the work. The committee on local organization is composed of Dr. H. B. Tileston, Sr. (Old Harry), Chairman, Dr. H. B. Holmes and your humble servant, Secretary and Treasurer. Last January, a year ago, we organized the Blue Grass Dental Society, composed of Fayette, Madison, Jessamine, Bourbon, Woodford and Boyle counties, Dr. Williams, Secretary and Treasurer, which now has 30 members. Next came the Eastern Kentucky Dental Association, composed of the following counties: Pike, Floyd, Knott, Johnson, Lawrence, Boyd, Carter, Greenup, Morgan, McGoffin and Elliot: R. H. Leete, President, Prestonburg: P. H. Williams, Secretary and Treasurer, Ashland, with a membership of 28. Then came the Davis County Dental Society which was organized in April, and has a membership of 14. What these societies have accomplished is not for me to say, since they are all represented at this meeting, and are able to speak for themselves. I hope someone will ask why it is that this committee which has been in existence nearly two years has succeeded in organizing only three component societies. Realizing the possibilities of local society work has made me very enthusiastic, and I reluctantly bring my paper to a close, not because I am done, but for fear it might weary an already indulgent audience.

DISCUSSION.

J. S. CASSIDY, Covington, Ky.: Whenever we see Dr. Eble's name on a program we may well anticipate a mental treat. At any time of the day, upon any subject whatsoever, a paper by him is sure to enlighten as well as entertain.

This paper which he has prepared for us has been no exception to the rule. It does seem to me, however, that he has made a particularly happy selection of a subject, for no one is better qualified among us to speak of cooperation than Doctor Eble.

Cooperation means a "working together," a forgetting of self, a merging of self with others, in order that the greater good may be the portion of the greater number. This means to possess unselfishness in a marked degree; to be willing to give as well as to receive, to work, to operate with one another.

This is the basis upon which all society rests; it is the firm foundation upon which the structure of all civilization has been reared. To neglect it means failure in any undertaking, to follow it out means as certainly to succeed. In coming to our state, district or local meetings, every individual member expects to receive something of value. Every individual member ought to expect to give something of value to the common good.

Whenever a majority of our members, or the members of any other society, attend a meeting with the expectation of receiving in the aggregate more than they are themselves willing or able to give in the aggregate, that moment will our society be in peril and upon the downward path toward dissolution.

We as dentists meet in Kentucky yearly to bring our precious little bits of learning or discovery, to place the several parts in the melting pot of discussion and criticism, that each and all may benefit in the distribution of the pure unalloyed truth, after the drop of error and mistaken judgment has been removed.

It behooves us, then, to ponder the subject, to ask ourselves earnestly and in good faith, "Am I doing my share in this work; am I truly cooperating with my fellows or am I willing to have them do the investigating? The giving of clinics or the preparation of papers is not for me." If this be our answer we are not cooperating in any sense of the word. I want to thank Doctor Eble for the position he has taken upon this subject and for the masterly way in which he has treated it.

TO ANNEAL BROACHES

By J. A. Libbey, D. D. S., Pittsburg, Pa.

Select Swiss broaches that are tapered (they are better than the English), use a pan $\frac{1}{2}$ in. deep and 6 or 7 in. in diameter, fill it with fine asbestos and put the broaches in, the points to the center. Cover with asbestos and put a close fitting lid on, set it on a burner with about the amount of flame used for vulcanizing, for one hour, and allow it to become perfectly cold before removing.

SOME POINTS IN THE TREATMENT OF DECIDUOUS TEETH *

By Dr. E. J. Zeidler, New Orleans, La.

IN presenting this paper before the society for discussion, I simply wish to advocate methods that in my practice have proven satisfactory. No mention will be made as to the management or handling of our little patients, with the exception that under no consideration should we attempt to deceive them, or misrepresent our aim and object. In other words, do not extract a tooth after you have told the child that you are "simply going to put a little medicine into it." On the contrary, every effort should be made to gain and to retain the confidence of the little one.

In the treatment of these very important deciduous teeth, too much stress cannot be placed upon the danger of too early extraction. The calcification of the process makes the eruption of their successors more

*Read before the Louisiana State Dental Society, June, 1909.

difficult, and as these follow the line of least resistance, they are very liable to be deflected from their proper course.

Undoubtedly no other cause is more fruitful of irregularities in the permanent teeth than the injudicious extraction of the temporary molars.

Failure of the jaws to develop in proportion to the eruption of the permanent teeth is often the case, and the first permanent molars will either tip over into the space made by the extraction of the temporary teeth, or be forced bodily forward by the developing second molar, so that by the time the bicuspids are erupted there is not sufficient room for the cuspids which are forced to erupt out of the arch. Unfortunately, this is a common condition.

Frequently children are brought to the office with the crowns of the anterior teeth badly broken down, as the result of caries, and with a slight protrusion of the apical end of the root through the gums. If extraction is not indicated, it is my custom to grind down all ragged edges, the apical end also, and dismiss with the advice that the parts be cleansed daily with dioxogen. The filling materials are of necessity limited to those of easy insertion and include copper oxyphosphate cement, oxychloride cement and amalgam. In simple occlusal cavities which will not permit of much drilling or excavating, I use copper cement, and the results have proven very satisfactory. This cement is not only a non-conductor, but possesses, also, strong antiseptic powers. I have noticed in some teeth which have been filled with this material, that while there may have been a great disintegration of the cement there has been no recurrence of decay.

The more difficult cavities are those occurring between the molars. Many little ones come to us complaining that they cannot eat upon certain teeth because they hurt. Upon examination we usually find that a cavity between the teeth has permitted the formation of a wedge shaped space between the teeth, and find the gum pushed beyond the gingival margin as the result of the packing of food therein.

Now, if these conditions are permitted to remain, the pain incident to the mastication of food will cause the child to shift the food to the other side of the mouth, thus developing the unnatural habit of chewing on one side only, and if the condition happens to be the same on the other side, the little one, to avoid the pain of mastication is apt to acquire the undesirable habit of bolting the food whole.

The pain attendant upon the proper preparation of such cavities can be greatly overcome by devitalization, which I do not hesitate to do. The same precautions are observed in placing the arsenic, as is usually done, with the exception of using the cotton-rolls instead of the rubber dam. The application is allowed to remain for three or four days. No attempt is made to fill the root canals, I merely remove the contents of the pulp-chamber, fill with the ordinary mummifying paste, which has been moistened with formaldehyde solution, and fill the cavity with amalgam, using cement as an intermediate.

In those cases where a sinus exists and is discharging pus, I open up the pulp-chamber, syringe out contents with tepid water and seal in the chamber a paste made of oxide of zinc and creosote, to which has been added a drop of formaldehyde solution. The child is dismissed for a week or ten days, at the end of which time the sinus will have healed and all soreness which may have existed will have disappeared. I would then proceed to fill the cavity.

Frequently as the result of abscess formation, little patients are brought to us with the face very much swollen, suffering tortures, and with the tooth so sore that it cannot be touched without great pain. In these cases I administer somnoform, lance the gum, open the tooth, and apply paste as in chronic abscess. A peculiar stage of analgesia as a result of the somnoform will permit of considerable work being done on the tooth long after the patient has revived from the anesthetic.

In regard to extractions, it is almost a universal rule with me never to extract except where there is considerable protrusion of the root end through the gum, or where they become loose owing to the presence of their successors.

As regards the six-year molar, all simple cavities are filled with copper cement with the exception of those occurring in the mesial wall at a period before the eruption of the second bicuspid. These cavities are usually filled with gold, using cement as a lining. The advantage of cement is that it avoids the use of undercuts or retaining pits. All that is necessary is to make the cavity slightly retentive. Failing to appreciate the value of the deciduous teeth, and mistaking the first permanent molar for one of them, mothers frequently neglect these teeth until they are presented to us in a very badly broken down condition. In these cases every effort is made to preserve the pulp until the root-formation is completed, for it is only at this period that we can afford to temporize with pulp-capping, as the danger of strangulation is so much less when the teeth present large apical foramen.

PRACTICAL HINT

By F. B. Spooner, Brooklyn, N. Y.

Get a flat iron at a hardware store. Cut a hole for the handle in your work bench. This allows it to be easily taken out, and laid one side. The flat surface can be used for various purposes as an anvil. The lady of the house may rob you, but another is cheap, and two people are made happy.

CEMENT AS A RETAINER FOR METAL FILLINGS

E. L. Patchin, D. D. S., Cleveland, O.

Some years past a young lady patient came to have some gold fillings made. I lined the entire floor of one cavity with finely ground cement.

It being a little slow in setting I thought to apply heat, so touched it with warm corrugated surface gold. It stuck fast, so I put in more, carrying it in to the undercuts until there was gold all over the cement. I went all over it with my serrated plugger. This should require judgment not to crowd it too hard. I put in another layer of gold hiding the cement completely. I found the cement hard; so malleted on and finished it the same as an all-gold filling. This filling has outlasted others put in at the same time and in the regular way.

Although soft cement lining was not new to me in amalgam, I never had at that time heard of it in making gold retention.

I have since used it quite extensively in nearly every cavity likely to show through. It will be necessary to have good room for manipulation and there will be a tendency to get in too much cement at first. Study your cavity and have good thickness of gold where stress is greatest.

Observe these points for trial: Mix your sticky inlay cement and bunch it flat on your slab; warm your gold and lay on flat-wise, going over it with serrated plugger lightly; add other layers. If it is a quick setting Ames' cement, you may have to hurry some; give time to harden; test it. You will then know if it can be depended upon to hold, at least under an undercut. It saves the sting of points and grooves that are hard to dispense with in a foil filling.

I gave a clinic at the Northern Ohio dental meeting in June held at Cleveland in which I filled an upper central disto-occlusal cavity taking in the incisal edge, using six and three-fourths sheets No. 4 Williams' corrugated surface gold over Ames' white cement, liquid C, and making several tests. The tooth is in evidence with the filling intact.

PRACTICAL SUGGESTIONS

By Dr. R. E. Cockrell, Dentist, Laredo, Texas.

TO REMOVE STEELE'S OR BREWSTER'S FACING FROM BRIDGE OUT OF MOUTH.

Invst bridge covering teeth and heat slowly over bunsen burner or gasoline stove for an hour; let cool and teeth will come off by using a little force.

A GOOD SPRUE WIRE FOR INLAYS.

Old needles used with a Victor talking machine.

PRACTICAL SUGGESTIONS

PRACTICAL POINTS

By R. B. Tuller, Chicago

In the use of borax in soldering, it is better to first heat it and drive off the water of crystalization and then pulverize. This prevents it boiling up and often dislodging the pieces of solder.

In wiring loose teeth together, instead of weaving a wire in and out around each tooth and then back the same way, it will often be found easier and better to use a double wire, making one loop around all the teeth involved, and twist the ends together at a convenient place with pliers, but not drawing the loop tightly. Now take shorter bits of wire and make as many long staples as ties between the teeth are wanted. Push them from the inside outwardly, one leg of staple below the wire loop and the other above. Twist these ends with plier, drawing the loop wires together—or towards each other between the teeth. This will tighten the loop up and make it hug every tooth, holding loose teeth in line so firm that they can scarcely be moved more than the solid teeth and may be so held for months. The twisted ends cut off at a reasonable length are then bent over in between the teeth. Of course, any wired teeth will catch some food particles, but this may mostly be removed by rinsing thoroughly; and round wires against the teeth do not hold secretions like flat bands that usually cause decay after a few months or even a few weeks. No decay will occur on account of round wires if any precaution is taken to flush out and sometimes perhaps, pick out some of the collected food. Loose teeth held in this way for months and properly sealed and treated have often become very firm and healthy again.

For separating teeth easily and painlessly prior to filling, use cotton tightly wedged between the teeth. This can be done easily where there are cavities. When there are no cavities a piece of cotton twine may sometimes be forced through and then the ends brought together and drawn tight and knotted buccally. Sometimes cotton wedged between teeth will not stay. Run a piece of silk ligature through above and tie around the cotton, bring ends together, draw tight and tie. Usually cotton will in one day separate teeth all that may be necessary and rarely if ever are they sore, the wedging is done so slowly and gently.

Very thin ribbon saws, such as most dentists have in plenty, make splendid matrices for many situations, though the dental depots carry a matrix metal that comes in sheets which may be cut with scissors, as easily as paper, into any shape desired. A matrix made from a large gelatine

capsule for amalgam fillings to be left in place to dissolve out are very excellent, as there is no danger of disturbing the filling by trying to remove before the amalgam is hard.

If your mouth mirror steams over in the mouth, warm it until it is warmer than the mouth, or rub over the surface with a little glycerine which may be wiped off well and yet will prevent steam collecting.

It frequently happens that you cannot get patients back to polish amalgam fillings. A good plan to follow is to finish as well as can be while the amalgam is yet soft. Nothing is better, perhaps, than a pretty tightly rolled pellet of cotton held in the pliers. With this one can wipe away surplus material flush with margins. Use the back of a thin strip to finish between. The finish is a sort of velvet finish, and is very good if they never come back. Cotton used in this way is the best way to get the occlusal surface shaped as desired.

A good strong horseshoe magnet is often serviceable in removing broken broaches in roots, depending somewhat on how far up they are broken off and how firmly anchored. Take an old broken, smooth broach and pass it up into the root in contact with the broken piece. Put the magnet on the projecting portion and pull on the broach. The broach becomes part of the magnet in that way, and exerts the same sort of pull on the broken piece. Repeat a dozen or more times if necessary.

A solder for any carat of plate, no matter what, can be made by taking 89 parts of that plate, 7 parts of silver and 4 parts of copper. It makes a nice easy flowing solder for that plate of close approximating color.

Sticky wax for holding gold parts together previous to soldering, may be made of 2 parts of rosin to 1 part beeswax. Melt the rosin first in a tin and add the wax, stirring till well mixed, then pour into a cup of cold water. Take a piece the size of a walnut and, keeping the hands moist, roll out into pencils, or roll them on a piece of glass.

When it is desired to remove porcelain teeth from a rubber plate it may be easily done by heating the teeth over an alcohol flame, then with an instrument placed behind they may be quickly pushed off.

To avoid displacement of small pieces of soldering by bubbling borax rub up with your flux and water on your slate a little gum arabic.

In cleaning teeth mix your pumice with peroxide of hydrogen, which is a great aid in removing stains.

Absorbent cotton rolls for dentists are very commonly in use, but non-absorbent rolls, it seems, some dentists do not know about. Either can be secured and the latter are very often more useful than the absorbent. If you want to dam the flow of saliva, use the non-absorbent; it doesn't soak full for some little time. One can use both sometimes, the absorbent first and the non-absorbent over and next to the teeth being operated on.--
American Dental Journal.

MOUNTING THE DETACHED-POST CROWN ON CAST GOLD BASE

By J. G. Lane, Philadelphia, Pa.

Prepare the root end by the ordinary method of setting such a crown, and adapt the crown to it by grinding. A perfect adaptation is not necessary, however, at this stage, although the crown and stump should approximate closely on the labial side. Grind out a small semi-circular space in the edge of the palatal side of the crown to allow a little more space between this part of the crown and the root end. The importance of this little space will be obvious as we proceed. A dowel of round platinous gold or iridio-platinum wire of suitable size is cut to proper length and is further prepared by melting fast to it, near its center, a small disk of wax such as is used for inlay patterns. This wax should be sufficient in bulk to complete the adaptation between the crown and the root. Oil the cut end of the crown, slightly warm the wax, and assemble the crown, wax, and dowel on the stump. Press home hard enough to make the crown and stump come into contact, or until only a film of wax remains at the closest places. Remove from the stump, chill in water, and with the wax, crown, and dowel assembled remove the surplus margin of wax with a sharp knife. The sprue wire is now inserted into the edge of the wax disk where it has enlarged into the little semi-circular space at the palatal side and the whole is again assembled on the stump to correct any defects in the adaptation caused by trimming and placing the sprue wire. The wax disk and dowel are now ready to be flaked in the ordinary manner for casting, and a disk of pure gold is cast directly on the dowel. The result is a gold fixture that will take the place of the objectionably large cement line, avoid all the misfits ordinarily present, and make an adaptation that will reduce the cement line to the same infinitesimal minimum that is present under a well fitted gold or porcelain inlay.—*Dental Cosmos*.

CONSERVATISM IN BRIDGE WORK RESTORATIONS

By Fred A. Peeso, Philadelphia, Pa.

In building a bridge over a river, the number, position and condition of the abutments are vital points for the life of the structure. If the abutments are built on an insecure foundation the structure will fall. If the foundation be all right, and the abutments are made to support one hundred tons, trouble is sure to arise if one thousand tons of weight be placed on the bridge. The same will happen if the number of abutments be insufficient; the whole work is wasted.

The same conditions apply to bridge building operations in the mouth. The foundations must be perfect and proportioned to the stress which the bridge, when being used, imposes upon them, else you will see the structure collapse.

It does not make any difference how skilfully or how beautifully the prosthetic part of the work is done, the success of bridge work depends upon the fundamental preparation of the mouth.

RELATIVE STRENGTH OF TEETH.

The relative strength of the different teeth must also be considered. The canines and molars are the strongest and form the best abutments, but we cannot put the same amount of stress upon laterals, centrals, or bicuspids, although these teeth will do their proportionate share of the work.

A tooth properly treated will do far more work than it was originally intended to do, but we must not expect too much, or we shall regret it.

Two roots of equal stability used as abutments of a properly constructed bridge will successfully resist twice the stress of mastication which either root can bear individually, and when we come to multiply abutments the ratio in which these combinations of abutments resist the stress of mastication seems to increase proportionately.

Articulation is also of the greatest importance. The abutments of a bridge which otherwise might have lasted for many years may be completely ruined in a short time by a faulty occlusion.

The stress of mastication, which in some mouths is far greater than in others, must also be considered.

The shape of the arch, too, has a great deal to do with the lasting qualities of a bridge. A bridge in one mouth might last for years, while in another mouth, with exactly the same abutments and in equally good condition, but with a differently shaped arch, to place a bridge would be wholly inadvisable.

The fact that a bridge in contemplation would occlude with a plate would have a bearing on the utility of the work.

All of these things, and many more, must be conscientiously studied by the man who honestly desires to do the very best for his patients.

The lack of that success toward which all of us are striving is largely due to the lack of training in the fundamental principles. We must get at the root of things. We must understand the engineering principles upon which successful bridge work is of necessity founded, and be willing to study and work hard if we ever hope even to approach the ideal. Even then there may be failures, but if we are honest at all times, such failures will be progressively fewer.

We cannot guarantee the success of our operations—nor have we any right to do so, any more than a physician can guarantee a cure; but if we have conscientiously studied our cases and have done the work to the very best of our ability, we shall at least have a clear conscience, even though our efforts may not have been crowned with success.

As I have said before, the success of bridge work depends primarily upon the preparation of the mouth, and of this preparation the shaping of the teeth and the fitting of the bands is a most important part. The lack of preparation and the subsequent evil results have been forced upon me many times. The teeth must be prepared so that the bands will hug the root at the neck tightly and cause no gingival irritation. If this be done,

the chances of successful results in our efforts are very favorable, but if the preparation be faulty we have no one but ourselves to blame for our failures.—*Dental Cosmos*.

THE LAYER METHOD COMPARED WITH OTHER METHODS

By W. L. Fickes, Pittsburg, Pa.

The majority of porcelain operators are using the layer method, introduced by Dr. Reeves, in preference to other methods for the application of the body. There are reasons why the layer method is to be preferred. Porcelain bodies are all more or less translucent, and every layer of body, in succession, is influenced by the adjacent layers. The degree of modification is principally dependent upon the thickness of each successive layer, upon its position in the inlay, upon the degree of translucency of the body, upon the hues and tones of color, and upon the intensity of the colors. These are all guides to the final result. The varying thickness of the layers has an influence on the final color, and a knowledge of that modifying influence is more easily acquired because we have the measurement of thickness as well as color, to guide us.

We get purer colors by the layer method, and the modifications in color are more easily understood. The direct mixture of the bodies, by absorption of additional rays of light, produces a greater percentage of black than would result from the use of the layer method. Light tints may easily be deepened by mixing but dark tones cannot be made much lighter. The raising or lowering of the tone is more readily controlled by baking in layers. The final color is produced by successive steps, and it is possible thus to make modifications at any stage up to the final layer.

The porcelain worker should experiment by making many combinations of colored bodies, in layers of varying thickness, and of mixtures. These combinations should be of varying intensities of hue and tone. Misgivings and doubts will soon disappear, and the operator will gradually work with greater confidence and skill.—*Dental Cosmos*.

CEMENTS AND THEIR MODIFYING INFLUENCES ON INLAYS

By W. L. Fickes, Pittsburg, Pa.

The modifications in the color of an inlay after it has been cemented to place have generally been attributed to the effect of the shadow of the cement. This is misleading, if we understand it to mean the ordinary conception of a shadow. It has been said that this shadow would not be present if we could obtain a transparent cement. When light passes through two media which differ in optical density it is refracted. If the cement absorbs a proportion of colored rays, complementary to those absorbed by the tooth and porcelain, a certain proportion of black will be formed; if the cement absorbs a portion of the light rays, there will be a decrease in luminosity; if the cement has the property of transmitting or reflecting considerable white light and colored rays which antagonize the effect of the

porcelain colors, there will be a consequent change in the color of the filling.

These are not all the changes which might take place because of the cement, but they are sufficient to demonstrate that the modifications in color are not all due to what is generally understood as "shadow." They also demonstrate the fact that a transparent cement would not necessarily solve the problem. We require a cement that will have the least influence in changing the light rays as they are transmitted through the tooth, and that will cause as little change as possible from reflected rays. It should be of an optical density between that of porcelain and of tooth-substance, so that the light rays might be transmitted with as little change as possible. It could be as opaque as the tooth, and yet not interfere with the final result any more than would the tooth itself.

A knowledge of the various modifications caused by the cement can be more easily learned by using as few cement colors as possible. Skill in overcoming the modifying influences of one color of cement is more quickly acquired than if many are used. Cements which differ in chemical constitution or in crystallization also differ in their optical effects. It is, therefore, easier to acquire a knowledge of these effects by using one variety of cement than by using many.

It is only through a knowledge of optics, especially in relation to light and color, that the porcelain worker will be enabled to solve perplexing color problems. A complete explanation of each phase of the subject of color and its relation to inlay work could not be given in a short treatise; the writer has therefore confined his remarks to a few of the fundamental questions.—*Dental Cosmos*.

TO BAND A ROOT SO THAT THE GOLD WILL RESTORE A PERFECT CONTOUR BETWEEN ROOT AND CROWN

A. J. Sawyer, Manchester, N. H.

Prepare the root by beveling considerably toward the crown end. Cut a band as small as will go around the smallest part of the prepared end of the root, so that, as it is pressed to place, it will stretch to fit closely the beveled portion.

Now grind the root, with the band in position, as short as desired. Then grind a porcelain crown—I prefer detach-post crowns—to fit the case, as far as length and occlusion go. Now burnish or swage a piece of No. 35 pure gold to accurately fit the end of the porcelain crown next to the band.

Then place the crown, with this gold on it, on the root with the band on, and with the tooth in its proper position, mark where the gold band and the gold burnished over the end of the crown come together, so that both the band and the gold on the crown can be removed and caught together with a very minute piece of solder on the lingual side only, just enough to hold the two pieces together. They are then replaced on the root and the crown is put in position, and as the band and crown plate have only

been slightly caught together on the lingual side, there is some latitude left in the adjustment of the band and the crown plate, which are now made perfect as to their relation to each other, although they need not necessarily fit closely together. Both band and crown plate are now slipped off and the inside of the band and the side of the crown plate, where the crown is to set, are filled with powdered asbestos mixed with water, and a little wire is twisted around to hold the parts in position. Then on the outside of the band and between the band and the crown plate flow some 22-k. gold solder, then cement the crown and the band and the post together in position on the root, but do not cement to the root yet, as when the cement is hard, the crown, band and post are removed and the band is finished down even with the crown. It is then ready to be permanently cemented upon the root.

Dental Cosmos.

APPLICATION OF LIGATURE

By J. V. Conzett, Dubuque, Iowa

When you expect to use a ligature rub the gums with a little oil of cloves before applying the dam and then when you apply the ligature do not tie a knot and then with an instrument try to force it up under the gingival margin until you have about exhausted the patient, but tie a loop of the floss and then with the curved points of your pliers go between the ligature loop, placing the points of your pliers carefully but firmly as far up as you want your ligature to go, then with the left hand make firm traction upon the loop and it will slip up over the incline made by the curved points of your pliers under the gum, just where you want it, without any pain to your patient and with little trouble to yourself. Instead of the universal use of the ligature, a piece of rubber band slipped in between the teeth and up to the gingival margin will hold the dam in place nicely where it has a tendency to slip off.

After placing the dam, always go over the surfaces of the exposed teeth with a pledget of cotton saturated with alcohol, repeat this several times and dry with a blast of air. This has a double function. It cleanses the field of operation and it removes the oleaginous materials from the surfaces of the teeth and prevents the rubber dam from slipping off. Indeed, so closely does the dam adhere to the teeth after the alcohol bath that it is almost impossible to get the dam off the teeth after the operation without tearing it. One of the nicest things that I have found for cleansing the teeth with the alcohol, and, in fact, for a great many purposes, are pledgets of cotton which my assistant prepares for me by cutting the smallest size Johnson & Johnson cotton rolls into pledgets that are about as long as their diameter.—*Dental Digest.*

EDITORIAL

THE CEMENT PROBLEM

The cements have been used in dentistry as filling materials for nearly half a century, and while there is a marked improvement in the present-day cements over those of years ago, chemists have yet to produce a material that will make a permanent filling.

We will not say that such a cement will never be found, but if it be it must be a different combination from those now in use.

A departure from the cements in common use was made a few years ago and dentists were led to believe that in the new silicate cements, or so-called artificial enamels, a permanent filling had been found; that the ideal had at last been discovered.

Dentists everywhere began using the new preparations and became enthusiastic in their use.

The fillings had a more translucent and natural appearance than fillings from cements that preceded them, and this natural appearance made them very attractive.

The result was that many dentists allowed them to displace all other cements in their practice.

Later, many of the fillings discolored, and some failed which necessitated new fillings and much inconvenience and loss of time to the dentists. The manufacturers attributed this to faulty manipulation, and laid down exacting rules for the handling and preparing of the material.

While some had had enough of the experiment many other dentists, believing themselves at fault rather than the material, for some of the fillings made had every appearance of permanency, renewed their efforts, determined to master the manipulation as outlined, and continued their use, but with more caution.

In order to obtain a consensus of opinion as to the real merits of the silicate cements, after a fair trial, THE DENTAL SUMMARY recently sent a series of questions to a number of prominent dentists throughout the country, and their replies will be found published in this issue.

The indiscriminate use of the silicate cements shows the tendency of dentists to go to extremes. Conservatism is the safer course, especially in the testing of new materials.

While the silicate cements may resist the action of the oral fluids better than the zinc cements, time is proving that there is slow disintegration of

the fillings, that they cannot be looked upon as permanent operations, and patients should be so informed.

The extensive use of the material for "re-enameling teeth" with representation that the fillings will be permanent, will prove detrimental to dentists and dentistry. Used conservatively and in appropriate cases they may be found worthy a place in the list of filling materials but they should be used with a view of temporizing and not with the idea of permanency.

A CIRCULATING DENTAL CLINIC

The dentists of the United States are soon to have an opportunity of witnessing the best clinics that can be gotten together. A circulating dental clinic is assured.

The idea of such a clinic originated with Dr. S. M. Weaver, Cleveland, about a year ago and after formulating his plans he laid the matter before The Cleveland Dental Society (now a component society of the State), and favoring the idea they appointed a committee consisting of Dr. S. M. Weaver, chairman, Dr. George H. Wilson, Dr. Weston A. Price, Dr. Varney E. Barnes, Dr. H. L. Ambler, and Dr. H. C. Kenyon.

The duty of this committee was to arrange an interchange of clinics with a number of cities representing different sections of the United States.

The cities chosen are: Cleveland, New York, Philadelphia, Chicago, Kansas City, Los Angeles and New Orleans.

The idea is to have the dental society in each city appoint a committee of six members to co-operate with a like committee in each of the other cities.

The duty of each committee is to collect ten or more of the best possible clinics from its district. The clinics to comprise new devices, new methods, pieces of superior workmanship, or anything else the committee elect as an educational clinic of sufficient importance.

When the clinics in each section have been collected, they are to be shipped to Cleveland and arranged in a systematic and presentable shape for exhibition and demonstration to the dentists of that city and surrounding territory which it represents.

The clinics will be kept in each section about one month, being sent from place to place for exhibition.

They will then be shipped to another city for the same length of time and so on until the circuit is completed.

Then a new set of clinics will be substituted and they will likewise be sent from one territory to another.

It is expected to make these meetings the largest exhibitions of progressive dentistry ever seen.

The chairmen of the selected districts are:

Dr. S. M. Weaver, Rose Building., Cleveland, O.

Dr. W. W. Walker, 58 W. 50th Street, New York, N. Y.

Dr. C. R. Turner, Dental Hall, U. of Pa., Philadelphia, Pa.,

Dr. (Name not yet announced), Chicago, Ill.

Dr. D. D. Campbell, Shukert Building, Kansas City, Mo.

Dr. Nye W. Goodman, Auditorium Building, Los Angeles, Cal.

Dr. J. A. Gorman, 1237 Maison Blanche Building, New Orleans, La.

To aid in obtaining the best of everything the central committee urges any one who has something worthy to present, to communicate with the chairman of the clinic committee in his district *at once* for everything must be gotten in shape in time for the first exhibition which is expected to be given early in **January**.

That our readers may familiarize themselves with the location and extent of the various districts we have had a map outlined and engraved, and it will appear in the December issue of **THE DENTAL SUMMARY**.

IMPRESSIONS OF THE LATE INTERNATIONAL DENTAL CONGRESS AT BERLIN

A colleague who was in attendance at the recent Dental Congress in Berlin has given the writer his impressions of the meeting and they are as follows:

The congress was largely attended, more than 2200 dentists being present.

The Reichstagsgebäude, or Parliament House, loaned for the meeting by the German Government, was a most complete building for the purpose. There were ample rooms for the sections, scientific and other exhibits, administrative offices, club rooms for different nationalities, waiting rooms and **restaurant**.

The general meetings were held in the spacious Chamber of Deputies which accommodated the vast assemblage.

In some ways the congress was great and in others disappointing.

The scientific exhibit was the finest ever gotten together. The War Department had a special exhibit showing everything that is being done to preserve the German soldiers' teeth, explanatory of the special training in the dental treatment of soldiers given to army doctors, and the measures taken in time of peace to preserve the soldiers' teeth.

The commercial exhibit was large and good.

There were 21 sections and some 350 papers read; but less than half of these papers were of scientific or practical value, although they were discussed at length, and became very tiresome. Besides, they were mostly in German, and as there were an insufficient number of interpreters possessing the requisite polyglot knowledge, the American did not get much from this part of the proceedings.

The clinics from our standpoint were a failure. While the best clinics were given by Americans their part was badly managed as there seemed to be no organization.

Notwithstanding how our dental friend felt about it, the press reports from Berlin had this to say:

“The papers read and the work exhibited by the American delegates were generally applauded and admired and it was admitted that the science of dentistry has reached its highest perfection in the United States.”

The social features were fine and will be long remembered. In preparing for the congress, however, a serious mistake was made by the Germans. Of the many worthy American dentists practicing in Germany, not one was invited to assist in the organization of the congress; and not only that, but the committee which organized the congress, we are informed, decided that the privilege of active membership should be granted only to dentists who practiced in the countries where they had procured their diplomas. This barred American college graduates practicing in Europe from active membership. They were eligible only for associate membership in the congress. This slight was resented by them and they resolved to take no part in the proceedings.

When the American delegation arrived and learned what had occurred, a conference took place and the matter so “patched up” as to give the American dentists of Europe full privileges, but it was done so late and reluctantly that very few Americans or Germans who had been educated in America, attended the congress at all.

Such slights, whether intentional or not, do not aid in bringing about solidarity of the dentists of the different nations, and generally reflect on the nation permitting them.

EARLY DENTISTRY IN AMERICA

We wish to call attention of our readers to the articles on “Early Dentistry in America” by Dr. H. L. Ambler, the first published in the October SUMMARY and the second in this issue, for they contain interesting information on this subject and some new facts are brought forth.

Believing that the true history of the first introduction of dentistry into what is now the United States of America, had not been published in the dental literature of this country (or any other as far as he was aware) Dr. Ambler, for THE SUMMARY, began a research in London, England, of documents and books dating back to the year 1600 and followed this by a search through records and books in the Boston libraries, and his findings are given in these articles.

Our writers of history have heretofore referred to Wooffendale, Greenwood, and Lemair, as the first surgeon dentists in the United States.

In speaking of his researches Dr. Ambler says:

“I found that in 1630 the Plymouth Company sent from London to Boston medically educated men who confined their practice to treating diseased conditions of the teeth and gums, cleaning and filling teeth, extracting and replacing with artificial substitutes, and correcting irregularities of the

teeth. There is no doubt in my mind but that this was the very beginning of orthodontia in this country."

This was one hundred and twenty or thirty years before Greenwood, Wooffendale, and Lemair and seventy years before the renowned Pierre Fauchard was born.

After reading the article in the October SUMMARY that eminent dental historian, Dr. William H. Trueman, wrote to Dr. Ambler as follows:

"I have just read your very interesting article, "Early Dentistry in America," and am glad that you have from undoubted sources so well unravelled the mystery of where the early New England dentists learned their art. You have added a very interesting chapter to our professional history and I congratulate you most heartily."

"TIE 'IM UP AND CATCH 'IM"

The writer remembers well an incident that occurred when he was attending college: One cold winter night on returning with a chum from the theatre our attention was attracted by an excited crowd of townsmen and students standing in the snow on one of the principal streets. On drawing near we learned that a tame wolf had escaped from its owner and the men wanted to recapture it but were afraid to touch the runaway.

While standing there debating what means could be devised to corral the wolf, a well-known student, a little the worse from the "night cap" he had taken, came staggering into the crowd with:

"Wash 'e matter 'ere?"

When informed of the unsuccessful attempt to capture the wolf he blurted out:

"Shat's easy! tie 'im up and catch 'im!"

And while the crowd laughed and jeered at the absurdity of the remark, the student suiting his actions to his words grabbed the wolf by the nape of the neck and handed him to the man with the chain.

During the remainder of his college days that student never heard the last of it for the remark seemed so senseless and ridiculous. But history repeats itself, 'tis said, though maybe in a different form; and what then seemed absurd, now appears to have been paradoxical, for a practical demonstration took place recently in a dental office in Paris, according to a report in a daily newspaper.

A well-dressed man called on a dentist stating that he wanted a tooth extracted. The dentist had a patient in the chair and the man was left for a short time in the waiting room. He made good use of his opportunity and filled his pockets with all the valuables he could place his hands on.

Unfortunately, however, for the thief, the door into the operating room was not fully closed and the dentist saw him in the act. Immediately he left his patient, walked noisily across the room and into the waiting room where he invited the stranger to take the chair in the extracting apartment. When seated the dentist pretended to examine the man's mouth, then administered an anesthetic which soon put the thief to sleep.

The dentist then summoned the police and when the man regained consciousness he found himself in custody of two officers.

The police commissary found a burglar's outfit on the man and after relieving him of it and the dentist's property, sent him to the lock-up.

Now this occurrence offers a good suggestion to American dentists who suffer loss of hundreds of dollars monthly from dental office thieves, for in all the robberies committed scarcely a thief has been apprehended, and the number increases daily.

And it would seem that after all the only real feasible method of getting the elusive dental office thief is to "tie 'im up and catch 'im."

"IT IS YOUR MOVE NEXT"

Under the above caption there appears on page 873 of this issue of THE DENTAL SUMMARY, an article on Oral Hygiene by Dr. J. L. Mewborn. It is an earnest appeal to dentists to wake up out of their lethargy and get into action. Every dentist should read the article for it is one of the best on this subject yet presented to the profession. When we think of the eighty millions of people in the United States and only about eight millions having any dental work done, does it not seem that the education of the people in dental matters has been meager? And whose fault is it?

Can dentists expect others to preach oral hygiene and the necessity of having the teeth properly cared for if they do nothing of the sort themselves? Seventy-two millions of people that do not at present have any dentistry done, and our dentists living right among these people.

What an opportunity for instruction; more than two thousand individuals for each dentist to enlighten. The situation is a serious one. It means more to the health of the nation than ever has been dreamed.

As Dr. Mewborn says, "The spirit of the times shows itself in this great progressive move for national health; the time is propitious and the world waits expectantly for this crusade of publicity and popular education on the care of the teeth. The public health demands it. What person or class of persons is better qualified than the dentist to spread the good gospel of oral hygiene."

And so it is that the time is ripe for action and dentists should "be up and doing."

What shall you do?

Get together and organize and plan the work for a crusade in your vicinity.

Use the material in the "Educate the People" Dept. of the DENTAL SUMMARY in your local newspapers to get the people interested, then furnish them material in the form of public talks, properly prepared pamphlets, or other legitimate means of educating the laity.

The solution of this educational problem lies in the hands of the dentists. To quote the slang phrase, "it is up to you." "It is your move next."

NEW PUBLICATIONS

A MANUAL OF THE INJURIES AND SURGICAL DISEASES OF THE FACE, MOUTH AND JAWS, by John Sayre Marshall, M. D., former Professor of Dental Pathology and Oral Surgery, Northwestern University; Member American Dental Association, American Medical Association; President of the Examining Board for Dental Surgeons, U. S. Army, etc.

Third edition revised and enlarged, Philadelphia; The S. S. White Dental Mfg. Co., publishers, 1909.

This new edition has been thoroughly revised and brought up to date. The author states that in the preparation of the various subjects comprising the work he has kept in mind the particular needs of the medical and dental student.

In Part 1 will be found those subjects which belong to the general principles of surgery, while Part 2 is devoted to the more common injuries and surgical diseases which are associated with the face, mouth and jaws. The first two chapters are devoted to surgical bacteriology. Then follows: Inflammation, abscess, ulceration, necrosis and caries, traumatic inflammatory fever, septicemia, pyemia, erysipelas, tetanus, shock and collapse, ligatures, sutures and suturing.

The author then considers wounds, fractures of the jaws, dislocation of the jaw, ankylosis, periostitis and necrosis of the jaws, stomatitis, leucoplakia, surgical tuberculosis, diseases of the maxillary sinus, diseases of the salivary glands, neuralgia, congenital fissures of the lip and vault of the mouth, tumors, treatment of sarcoma of the jaws, odontomata, retention, cysts, etc.

The text is well written and illustrated and contains a fund of information on this important subject.

GORGAS' DENTAL MEDICINE.—A manual of Materia Medica and Therapeutics. By Ferdinand J. S. Gorgas, M. D., D. D. S., Professor of the Principles of Dental Science, Dental Surgery and Prosthetic Dentistry in the Dental Department of the University of Maryland. Revised and Enlarged. Replete with practical suggestions for treatment. With an index of formulae and a general index, 8 vo. P. Blackiston's Son & Co., Philadelphia, Publishers.

This volume, now in its eighth edition, has been revised and brought down to date in the author's usual careful and thorough manner, and certainly deserves the high place it occupies as a text book in colleges and a ready reference volume for the busy practitioner. The immense amount of tabular matter, definitions, measures, weights, dosage rules, directions for preparing solutions, action of medicinal substances, etc., included in the book, alone make it invaluable; while, taken as a whole its contents properly assimilated, would go very far toward giving every intelligent dentist that thorough comprehension of the medicinal side of his profession so necessary in this day of rapid progress. Possibly the most valuable section in the entire work of more than 600 pages is that made up of the 40 pages devoted to "Important Points in Diagnosing Affections of the Mouth, with a Synopsis of Treatment." Among the large number of additions are chapters on Prescription Writing and Anesthesia, together with such new agents, their properties and therapeutics, as are at the present time employed in the practice of dentistry. Among this number are Somnoform, Adrenalin Chloride, Nervocidine, Codrenin, Argyrol, Acetone, Novocaine, Alkathymol, etc., etc., etc. A new "Table of Doses of Medicinal Agents" has been substituted for the one in the former edition and valuable additions made to the dental formulae.

DENTAL METALLURGY. A Manual for the Use of Dental Students and Practitioners.

By Charles J. Essig, M. D., D. D. S., late Professor of Mechanical Dentistry and Metallurgy in the Dental Department of the University of Pennsylvania; and Augustus Koenig, B. S., M. D., Demonstrator of Metallurgy in the Dental Department of the University of Pennsylvania. New (6th) edition, thoroughly revised. In one 12mo. volume of 355 pages, with 77 engravings. Price, cloth, \$2.00, net. Lea & Febiger, Philadelphia and New York.

A very important service has been rendered by this volume of modest size and price. It furnishes students with the theoretical knowledge and also a practical laboratory course, and it equally answers the needs of the dentist in his daily work. That six editions have been called for is scarcely to be wondered at. In this latest issue the work has been again thoroughly revised, both in order to bring it to the latest date and to increase its adaptation to the needs of everyone interested in the subject, students, teachers and dentists alike. Much that is new has been added, including a detailed study of the qualitative analysis of the more important metals. As now issued the work is believed to be complete as a laboratory guide, a practical working manual and a book of instruction. No effort has been spared to make it represent the latest and best knowledge with scientific accuracy, directness and simplicity.

THE AMERICAN POCKET MEDICAL DICTIONARY. Edited by W. A. Newman Dorland, M. D., editor "*The American Illustrated Medical Dictionary*." Sixth revised edition. 32mo. of 598 pages. Philadelphia and London, W. B. Saunders Company, 1909. Flexible Morocco, gold edges, \$1.00, net; thumb indexed, \$1.25, net.

This is one of the neatest little volumes that we have seen. It contains all the principle terms used in medicine and the kindred sciences, with their pronunciation and definition. Also more than sixty extensive tables.

For this edition the text has been fully revised and many hundred new words have been added. It is an excellent book for the writing desk or library, and seems more complete than many works of its kind.

BIOGRAPHIES OF THE FOUNDERS, PROMINENT EARLY MEMBERS AND EX-PRESIDENTS OF THE MISSOURI STATE DENTAL ASSOCIATION.—By Burton Lee Thorpe, M.D., D.D.S., Chairman Committee on History, Missouri State Dental Association; Chairman Committee on History, St. Louis Society of Dental Science; Secretary Committee on History, National Dental Association; Secretary Commission on History, Federation Dentaire Internationale; Member of the St. Louis Medical History Club. Associate Editor *Dental Brief*.

In this pamphlet of 150 pages Dr. Thorpe has given, in his entertaining style, a history of the pioneers in the organization of the Missouri State Dental Society, its various presidents and of other prominent members of the association. The biographical sketches are illustrated with half-tone engravings of the subjects.

There is presented, also, a short history of dentistry in Missouri, the minutes of the proceedings of the first meeting of the society, which was in October, 1865, a copy of the first constitution and by-laws and the valedictory address of its first president, Dr. H. J. McKelleps.

Altogether it is a most creditable volume; one well worthy a place in any dentist's library.

GUERLINI'S HISTORY OF DENTISTRY.—Pub. Lea and Febiger, Philadelphia.

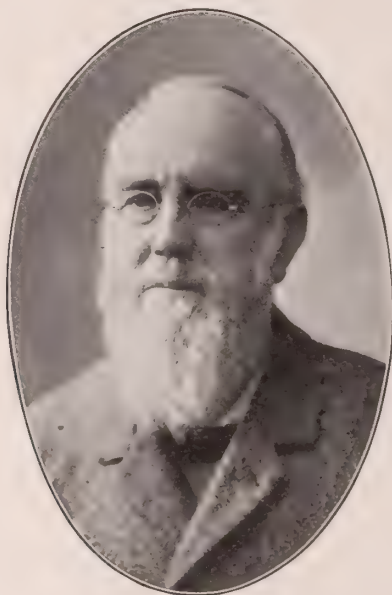
DENTAL MATERIA MEDICA AND THERAPEUTICS.—By Herman Prinz. Pub. C. V. Mosby & Co., St. Louis.

ELEMENTS OF ORTHODONTIA.—B. E. Lischer. Pub. by C. V. Mosby & Co., St. Louis.

OBITUARY

Ohio loses another of her pioneer and prominent dentists in the death of Dr. J. F. Siddall which occurred at his home in Oberlin, Ohio, October 12, 1909, aged 76 years.

Dr. Siddall was born January 2, 1833, in Columbiana county, Ohio. He spent his early years on his father's farm. In his early manhood he became a student in Mt. Union College at Alliance, Ohio. In 1855 he went to Oberlin as a student and continued his education there for two or three



DR. J. F. SIDDALL

years. He studied dentistry in Salem, O., where he was a pupil of Dr. Whinnery, a well known dentist of the time.

Dr. Siddall began to practice dentistry in Hillsdale, Mich. He married Sarah Orinda Candee, March 18, 1857, of Whiteford, Mich., who survives him. Within a few months after their marriage they went to Oberlin to live. He practiced his profession in Oberlin for upwards of fifty years, retiring permanently in 1903. He was recognized throughout the entire state as one of the able men of his profession.

He was one of the early members of the Ohio State Dental Society and

joined the Northern Ohio Dental Association at its second meeting in 1858 and was a constant attendant at the annual meetings.

Dr. Siddall was always a progressive and conscientious dentist. He was the life of the meetings he attended and was ever ready to give a helping hand or kind word to the struggling young man who was just starting on his dental career.

Dr. Siddall was from early manhood a devout Christian and was beloved by all who knew him. He is survived by a wife and five sons: Dr. Charles J. Siddall, of Kalamazoo, Mich.; Eugene A. Siddall, a hardware merchant of Wells, Minn.; George B. Siddall, a lawyer residing in Cleveland; Dr. W. A. Siddall, a dentist, also of Cleveland; and John M. Siddall, associate editor of "The American Magazine," in New York City.

AN EXPLANATION

Dear Doctor:—I wish to announce through THE DENTAL SUMMARY that the article, "Propagandism of Dental Education in our Schools," as it appeared in the October issue of the DENTAL SUMMARY was not entirely original with me.

When searching for literature on the subject of the paper in question, I found some material which I made use of, not knowing the author nor in what journal it had previously appeared.

I have since learned that what I copied was from an article written by Dr. George Zederbaum of Charlotte, Mich., and read before the Michigan State Dental Society in June, 1907.

I wish to thank Dr. Zederbaum for calling my attention to the fact that he was the author of the original article and would be pleased if he will send me a complete copy of the same.

Yours truly,

FRED. H. WITTENBROOK, D. D. S., Lima, O.

KEEP your eyes, ears and all your senses wide open for opportunities. There never was a greater lie printed than that foolish old adage: "Opportunity knocks but once at any man's door" Why, the world is full of opportunities that knock and knock at every man's door. The trouble is that most of us are so completely absorbed by the little things that lie near us that we cannot hear the knocking. Don't let your neighbor wake up first and welcome the opportunity that may as well be yours.

SOCIETY ANNOUNCEMENTS

OHIO STATE DENTAL SOCIETY

The forty-fourth annual meeting of the Ohio State Dental Society, to be held in the Southern hotel, Columbus, on December 7-9, promises to be one of the very best in the history of this society. The program contains the names of such men as Drs. M. L. Rhein, New York; I. N. Broomell, Philadelphia; Marcus L. Ward, Ann Arbor; C. P. Pruyn, Chicago, and Sidney Rauh, of Cincinnati. The president, Dr. W. H. Whitslar, will give a stereopticon lecture Tuesday evening on "The Human Hand." Dr. Whitslar has talked on this subject elsewhere and is a known authority on Palmistry.

The clinic program will be the largest in the history of this society and will, in itself, well repay attendance at the meeting. There will be one hundred clinics covering all phases of dentistry.

The arrangements committee will provide a special social feature for the entertainment of the members and guests, giving all an opportunity for becoming better acquainted.

Many new members have been added through the organization of component societies.

Let every member be present and bring a friend. A royal good time and welcome awaits you.

F. R. CHAPMAN, *Secretary*.

KANSAS STATE BOARD OF DENTAL EXAMINERS

The Kansas State Board will hold a meeting, for the examination of candidates for license to practice dentistry in Kansas, beginning December 7, 1909, at nine o'clock in the morning. For blanks or other information write to the secretary, F. O. Hetrick, Ottawa, Kansas.

INSTITUTE DENTAL PEDAGOGICS

The Sixteenth annual meeting of the Institute of Dental Pedagogics will convene in Toronto, Canada, December 28, 29 and 30, 1909. It is the first meeting held north of the Great Lakes and our Canadian friends are preparing a most excellent program.

All dental college teachers are cordially invited to attend. B. E. Lischer, Secretary-Treasurer.

MICHIGAN STATE BOARD OF DENTAL EXAMINERS

The next regular meeting of the Michigan State Board of Dental Examiners for the examination of applicants for registration in this State, will be held in the Dental Department of the University of Michigan at Ann Arbor, beginning Monday, November 15th, at 8 a. m. and continuing through the 20th. Applications must be in the hands of the secretary at least 5 days previous to the examination. Application blank and copy of the rules can be had by addressing the secretary: A. B. Robinson, 44 Sheldon Street, Grand Rapids, Mich.

NEW JERSEY BOARD OF REGISTRATION

The New Jersey State Board of Registration and Examination in Dentistry will hold its semi-annual meeting in the Assembly Chamber of the State-house at Trenton, N. J., beginning Monday, December 6th, and continuing through the 7th and 8th.

Applicants for examination must file photograph and preliminary credentials with the application or it will not be received. Sessions begin promptly at 8 A. M. each day. Monday, December 6th, will be devoted to practical examination, Tuesday and Wednesday to theoretical examination.

Applications must be filed ten days prior to the meeting. Chas. A. Meeker, Secretary, 29 Fulton St., Newark, N. J.

NEW HAMPSHIRE BOARD OF REGISTRATION

The next meeting of the New Hampshire Board of Registration in Dentistry, for examination, will be held at Masonic Banquet Hall, Manchester, N. H., December 7, 8, and 9, 1909.

No special examinations. All persons must become registered before beginning practice. A. J. Sawyer, Secretary, Manchester, N. H.

G. V. BLACK DENTAL CLUB OF ST. PAUL**MIDWINTER CLINIC.**

The members of the G. V. Black Dental Club (Inc.) will hold their midwinter clinic in St. Paul, Minn., February 24 and 25, 1910. For further particulars address R. B. Wilson, Secretary, 409-10 Am. Nat. Bank Bldg., St. Paul, Minn.

MARYLAND BOARD OF EXAMINERS

The Maryland Board of Dental Examiners will meet for examination of candidates for certificates November 10 and 11, 1909, at the Baltimore College of Dental Surgery, Baltimore, at 9 A. M.

For application blanks and further information apply to F. F. Drew, Secretary, 701 N. Howard St., Baltimore, Md.

NEWS AND OPINIONS

The Universality of Life.

The adherents of the evolutionary—unfolding, developing—theory of life and progress recently have had reason to congratulate themselves.

The comparatively recent discovery of radium opened the way for a series of experiments that have led to the conclusion that we must search further back than the mineral kingdom for so-called inorganic—unorganized, dead—matter; that even the metals are alive, and that the law of evolution applies to them as well as to animals and men.

The rather startling assertion is now made by scientific men of unquestioned standing that metals are born, grow and die, just as does a tree, an animal or a man. M. L. DeLaunay, writing in a French scientific journal, *La Nature*, says:

The radium which we now find in natural deposits did not exist there—was not yet born—until within a definite number of years, and in a definite number more will no longer exist. It was once—as is now believed—uranium or thorium, and will become helium, after passing through the series of unstable states that have been called radium A, B, C, and D. If this phenomenon of evolution is general for all material substances, which we can not yet affirm, but which we have no longer the right to deny, all our conceptions of the earth's past will have to be reviewed and adjusted.

We must first familiarize ourselves with the fact that an element, instead of being unchangeable, lives and dies giving birth to other elements, like a living being.

Observations on this sort of change are very difficult; the life of radium, for instance, has been estimated at all the way from 100 to 10,000,000 years. Some investigators have estimated, instead, the period required to reduce the activity of radium to one-half, which Boltwood gives as 2,000 years. Others still have measured the energy given off by this substance, which amounts to 1,400 horse-power per hour, for a kilogram of it. The entire amount of energy contained in this weight of radium is given as 75,000,000 horse-power hours, which would make the life of radium—that is, the time required to lose all its energy, 50,000 years. It must be remembered that the methods of measuring such small quantities of the substance

as must necessarily be dealt with are particularly subject to error. Investigators of this subject deal chiefly with radium and its related elements, but the number of radioactive substances is being continually increased and the writer apparently infers that the property will one day be proved to be universal. Devotees of this new branch of chemistry have been amusing themselves by the construction of "genealogical trees" showing the line of derivation of one chemical substance from another. As yet, no one has been rash enough to include all the elements in such table, the evidently radioactive substances alone being used.

To sum up, we have at first uranium, whose life is 10,000,000,000 years. Then comes radium, a well-defined chemical body whose chlorids and bromids we have been able to isolate, with an average life of 2,900 years....After which, we know that radium produces its emanation, in whose spectrum appears at the same time that of helium. The emanation lives 5.57 days and passes into helium through a whole series of bodies which have been called radium A, B, C, D. The last of these lives 17 years. Radium F has been assimilated to polonium....and lives 206 days.

We may say that thorium lives 1,000,000,000 years, one-tenth as long as uranium, and gives rise to other thoriums and finally helium.

G. E. H.

Popular Education.

One phase of the work being done by THE DENTAL SUMMARY toward the education of the public upon the necessity of the care and preservation of children's teeth is now fully under way.

The following circular has been mailed to the editors of more than one thousand newspapers and magazines throughout the middle and western states:

LITERARY BUREAU
THE DENTAL SUMMARY.
514-518 JEFFERSON AVENUE.
TOLEDO, OHIO.

OCTOBER 15th, 1909.

Mr. Editor:—As a part of the world-wide movement toward the education of our people to a proper realization of the importance of the care and preservation of their teeth, THE DENTAL SUMMARY has established a Literary Bureau for the dis-

semination of knowledge having for its aim the arousing of popular interest in oral hygiene among the children of our public schools.

This great movement owes its inception to action taken by several Dental Associations, among men popularly but most erroneously supposed to be selfishly interested in the neglect of the teeth, and it seems but fitting that THE DENTAL SUMMARY, representing, as it does, twelve great State and Local Associations of dentists, should take a leading and active part.

The SUMMARY is in direct and constant contact with the leading men in these Associations, its pages are filled with contributions of the most able and most advanced men among them, and aims, in every way, to echo the spirit of progress now so manifest within the ranks of the most advanced profession on earth today. American dentistry leads the world.

We shall send to you, from time to time, Editorial Bulletins similar to the one inclosed, giving brief account of the progress of the movement for popular education along the lines suggested, opinions of leading men in the profession in America and Europe, and of educators and scientific men, together with much other matter bearing upon oral hygiene generally, with special reference to the care of the teeth of children.

We ask that you make free and frequent use of the matter supplied, using it as news, editorial matter, or otherwise as seems best to you, thus lending your aid to this great forward movement for the relief of suffering, the prevention of disease and crime, and the development of the race in the direction of moral, mental and physical perfection.

Nothing can stop the movement. Free school clinics already have been established in many cities, and the time is not far distant when dental as well as medical examination shall have become as common in our schools as mental examinations, and instruction in the care of the teeth a part of the required course of study.

Kindly send us marked copies of your publication containing any part of the matter supplied you. In compensation for this trouble, we will be glad to send to you one or more copies of THE SUMMARY, or, if you wish to receive it regularly, put your publication on our exchange list, bringing you in constant touch with the work of the great minds within the profession of dentistry.

We shall be glad to hear from you in reply, and to know whether or not you expect to use any of our matter. We ask this courtesy as an aid in determining the number of copies to print each issue.

Fraternally,

THE DENTAL SUMMARY.

Accompanying this circular, was sent the first number of our Bulletin, introduced by the following title-page:

Educational Bulletin

Issued By

The Dental Summary

Toledo, Ohio

For the unrestricted use of editors willing to devote a small part of their space to the education of the nation in the care and preservation of the natural teeth, thereby doing away with the major operations of dental surgery, preventing suffering, disease and early death, and aiding in the higher development of moral, mental and physical fitness of our people.!

Editors are requested to use any or all of the matter herewith, which is supplied absolutely without charge or obligation, the only request being that marked copies of publications containing any of the clippings be sent to us, addressed as follows:

LITERARY BUREAU,

The Dental Summary

514-518 Jefferson Avenue

TOLEDO, OHIO

Bound with this, in most convenient form for clipping, were sixteen pages of original matter and extracts, such as have appeared from time to time in our "Educate the People" department.

Just how true our aim has been, how widely this valuable matter shall become known, remains to be seen. Of one thing, however, we are assured: the editors of more than one thousand popular publications have had administered to them the first dose of educational medicine, in tablet form, and the great campaign may be said to be fairly begun.

Dentists Organize.

Dentists of Butler county, Ohio, September 25 organized the Butler County Dental society and elected officers as follows: President, Dr. W. B. Caldwell, Hamilton; vice president, Dr. C. I. Keely, Hamilton; second vice president, Dr. John Molyneaux, Oxford; secretary, Dr. E. L. Henes, Hamilton; treasurer, Dr. Frank T. Craven, Hamilton. It is expected that all the dentists in the county will be brought into the organization.

If more people would make as much effort to be sensible as they do to be thought smart, the fool-killer would soon be out of a job.

The October number was the first issue of the larger and amplified *American Magazine*, containing additional pictures, new departments and forty pages extra of reading matter.

A remarkable new series of articles began in this issue, by John Kenneth Turner, entitled "Barbarous Mexico." Few people in the world realize that actual slavery is at present not only being carried on in Mexico, but is tacitly protected and encouraged by the Government. Mr. Turner's articles are bound to make a profound impression, as he has been an eyewitness of the things about which he writes.

Four important and remarkable articles make this magazine touch the highwater mark of literary excellence: "The Confidences of a Psychical Researcher," by William James—Professor of Philosophy at Harvard College and beyond question the greatest living authority on psychical phenomena; "Stories of Football Strategy," by "Bill" Reid, the famous Harvard football coach; "The Soul of John Brown," by Eleanor Atkinson—a remarkable document of immense historical value; and "The Disintegration of the Jews," by Ray Stannard Baker—an article full of startling revelations to Jews and Gentiles alike.

Other particularly attractive features are "Mr. Dooley" on "The Magazines" and two new departments in the magazine, one devoted to pictures and short accounts of "Interesting People," the other to the news of the dramatic season, new plays, and photographs of actors and actresses who will appear in them.

Fiction of a distinctly high grade character is contributed by Robert Barr, Susan Glaspell, Xona Gale, Inez Haynes Gillmore, and Samuel Hopkins Adams, who writes a powerful allegorical story of three men who lived in "Stellopolis."

"The Interpreter's House" and "The Pilgrim's Scrip" contain an unusual amount of interesting reading matter.

Real Characters in Fiction.

"The Danger Mark" is out at last (D. Appleton & Co., New York). September 17th saw the publication of this new novel by Robert W. Chambers, which has created more of a sensation while running serially than any other book this autumn. The trouble started because the situation that Mr. Chambers chose for the opening scenes of his book has a near parallel in real life. Some prominent New York people claimed that relatives of theirs had been portrayed and libeled by the novelist. Mr. Chambers was, no doubt, quite unconscious that the central idea of his plot was not original with him. Two

very wealthy orphan children being brought up in ignorance of their riches, with a machine—a trust company—instead of a human guardian as arbiter of their destinies, seemed to him fraught with dramatic possibilities. Mr. Chambers made the most of these possibilities, and so life-like was his work that the officers of a trust company, which has the guardianship of a young girl and boy, heirs to a large fortune, took offense at the story and claimed that their wards were being caricatured by the novelist.

Anent all this, the *New York Times* said, in an editorial, not long ago, "The great ado made about the fancied likeness of this boy and girl to two living children, well known in New York social circles, naturally advertises the book—Yet we do not doubt that the author sincerely resents the charge of taking something of his subject from real life."

The Books We Read.

What we read has an actual effect on us. Books are also like people in that. The people among whom you spend most of your time will make you more or less like them, and the books you read will make your mind something like themselves. If we get into the habit of reading silly or careless or cheap literature, we gradually lose the power to read what is strong and true and fine. It is occasionally necessary to take a good deal of trouble to read a fine book, just as it requires care and time to do a fine piece of work. But it is worth the trouble. What is called a taste for good literature is one of the most delightful possessions in life. We must begin to get this taste while we are still young or we run a risk of never getting it at all; in which case we lose forever out of our lives all the beautiful and wise and noble books which the world has been making for us these many hundred years. It would be like going about in a few ugly rags when the closet upstairs is full of charming clothes ready to put on, and ours only for the trouble of unlocking the closet door.—November *St. Nicholas*.

A Merited Promotion.

The Ransom & Randolph Co. announces that Mr. John Riebel, for many years a member of its road organization, has been promoted to the position of manager of the Grand Rapids House, assuming his new duties on November first.

Mr. Riebel is a man of sterling qualities and an unusually strong personality. The House is to be congratulated upon its choice, and Mr. Riebel upon this evidence of confidence and the wider opportunity to develop the characteristics he is known to possess.

The Oregon Dental Law.

A correspondent writes as follows: In your July SUMMARY, page 3 of News and Opinions, you publish an article relative to who may practice dentistry in Oregon, a part of which is as follows: "It is further provided that the board may admit persons of good moral character who shall give satisfactory evidence of having been engaged in dentistry prior to the passage of the original act."

I would like to ask, does this apply only to persons practicing in Oregon at the time of the original act or would it apply to dentists outside of the state?

When was the original act passed?

In answer we would state that the passage referred to means that the dentist shall give satisfactory evidence of having been engaged in the practice of dentistry in the state of Oregon prior to the passage of the original act.

The original act referred to was passed in 1905, and the present amended law in 1909.

Oregon has made no provision for interchange of license with other states.

The applicant must be a college graduate and take the examination.

In Oregon there is a yearly license of \$1.50 for all practicing dentists.

Algernon Knox Johnston, who died October 3, at his home in Stapleton, S. I., was the inventor of a waterproof cartridge used by troops in the civil war. He was born in 1837, and was graduated in 1857 from Wesleyan University, where his father was a professor. After the war, he settled on Staten Island, and when Johnston Brothers consolidated with the S. S. White Dental Manufacturing Company, he became a director.

Dr. J. Frederick Huntington resumed his New York practice, October 4, in the Cosmos Building, 167 West 71st Street.

There are some remarkable short stories in the November *Lippincott's*. One of them is "Mary and Martha at Lunch," by Marion Hill, author of "The Pettison Twins." This has rare originality and subtle humor, with a dash of pathos by way of seasoning. "Love and a Morning Ride," by Elizabeth Maury Coombs, is a striking tale of the Southland. Other good stories are: "A Dead Letter Come to Life," by Anne Warner; "Lost—a Turkey," by Elliott Flower; "The Sight of the Soul," by Helen Talbot Porter; and "Much Ado About Nothing," by Thomas L. Masson. The complete novel in this issue is "The Magnate of Paradise," by Mary Inlay Taylor.

The Cause and Cure of Disease.

The word disease very plainly defines its own meaning. Disease—want of ease. That is a very clear yet emphatic definition of disease. Disease usually carries with it functional disorder, pain, congestion or other abnormal manifestations. It may be more or less severe, or it may be of such minor importance that you will not notice its appearance. Now there is a general misunderstanding throughout the entire healing world as to the nature of disease. There is nothing intricate or mysterious about disease. I do not believe any one is really and truly educated until he understands disease. You are bound to come in contact with it sooner or later. You cannot avoid it as long as you are living under what we term civilized conditions, as long as you have to subsist on food that is found in the average home, restaurant or hotel.

For several generations our food has been selected largely because of its appetizing appearance. Naturally the appearance of foods is of very great importance to many. If they are finicky, they like the table attractively arranged. The food must be attractive as well as tasty. It must be served in a pleasing manner or, to be plain, we have to cater to a large extent to a degenerate appetite. If you have a real appetite, such as one secures after abstaining from food for a few days, you will not bother much about appearance. You would be more interested in the taste of the food and you would become so engrossed in its enjoyment that appearance would be of but slight importance to you. It is, therefore, the finicky, perverted appetite which is to a large extent the cause of the present dietetic errors, and is very frequently the cause of numerous diseases from which so many suffer.—*Physical Culture*.

The Delaware, Ohio, board of education on October 1, granted the request of the State Dental society, which asked that the school children might be permitted to have an examination of their teeth made by members of the society, who wish to gain information which is to be used in agitation for better legislation regarding the care of the teeth of school children. The examination is not made compulsory, however.

Dr. George Hardecastle, formerly a prominent dentist of San Francisco, Cal., and member of the Grand Army of the Republic, shot himself through the heart twice September 23. Death followed almost instantly. Illness that made miserable his advancing years is thought to have prompted the suicide. He was 69 years of age.

Man With a Hollow Tooth.

A West Philadelphia dentist had a visitor recently with a tooth which, he said, was putting him in an early grave. He requested the immediate removal of the troublesome molar, and said he didn't wish the dentist to hurt him.

The dentist suggested that the man take gas, and the man agreed.

"Now," said the toothpuller, as he held the stiff apparatus, "very gently—very gently. One, two, three; you'll be off long before I've counted twelve—four, five, six"—slowly the patient closed one eye—"no larks, now—seven, eight"—one eye only was closed—"nine, ten"—

The dentist raised his forceps, but still the patient regarded him placidly out of a single optic.

"Eleven—Hi! I'll have to give you a double dose!" roared the dentist, losing all patience. "Shut that eye!"

"Can't," murmured the drowsy patient, on the verge of sleep. "It's glass!"—*Philadelphia Times.*

The New York *Herald* is responsible for the statement that retired blacksmiths and men who at one time earned their daily bread collecting fares on street cars have found a new means of livelihood on the east side. They are pulling teeth down in Pitt, Henry and Houston streets, and their schedule of prices, provided evidence to District Attorney Jerome by a committee of the New York County Dental Society is to be accepted, is about the same that the bootblack taxes the visitors to the Hudson-Fulton celebration for removing the mud from their shoes.

These amateur dentists are said to be doing a land office business, if the daily receipts of members of the profession who hold diplomas from recognized colleges are considered. Five hundred are said to be practicing dentistry illegally.

The principal contents of *The Technical World Magazine* for November, a most interesting number, are: 'Frisco's Fight With Bubonic Plague; High Explosives Used in Manufacturing Arts; How the Freight Car Gets Home; Wanted:—Brave Young Men; all departments are unusually well filled. This magazine is one that must appeal strongly to the mechanical side of every dentist.

Fire destroyed the office of Dr. J. E. Dammer in Shelbyville, Ind., September 11. Loss estimated at \$2,000.

If *Good Housekeeping* is not a regular monthly visitor in your house, your wife is missing many of the good things. If you can afford but one household magazine *Good Housekeeping* will fill every requirement.

"Early Dentistry in America."

That eminent dental historian, Dr. Wm. H. Trueman, recently wrote to Dr. H. L. Ambler, concerning his series of papers under the above title now running in this magazine, reference to which appears in our editorial pages:

This series is one of the most important that has appeared in *THE SUMMARY*, and is bringing out much favorable comment. It is the intention to reproduce the articles in pamphlet form. Readers of *THE SUMMARY* may procure copies at net cost, by writing at once, stating the number desired.

Address all communications on this subject to *THE DENTAL SUMMARY*, Toledo, O.

Dr. H. G. Wiggins who has been in practice at Battle Creek, Mich., for the past five years has sold to Dr. B. F. Johanson, Milton, Wis., a recent graduate of the Chicago College of Dental Surgery. Dr. Wiggins is now located at 401 Mack Bldg., Denver, Colo. Dr. Wiggins is a graduate of U. of M.-1903.

The Lehigh Valley (Pa.) Dental Society has decided to inaugurate a system of free examination of the teeth of school children in the valley, particularly children belonging to the poorer classes.



A Complete Dental Desk.

At our suggestion, the Weis Mfg. Co., Monroe, Mich., is advertising the most complete and useful desk for use in dental offices that we ever have examined. It may be had with any combination of nine kinds of filing drawers, for letters, index cards, documents, catalogues, etc., with shallow drawers for samples, instruments and other uses that will suggest themselves. The desk is of solid oak, mounted upon sanitary legs, and is as handsome as it is useful. Read the advertisement, and then write for catalogue. The desk can be bought through The Ransom & Randolph Co.

The Wide World Magazine, devoted to adventure by land and sea, appeals strongly to people with good red blood in their veins, who can appreciate the romantic in real life.

Listerine Tooth Powder

Tooth powders have long been empirically employed, chiefly as a mechanical agent for cleansing the teeth, and with little regard to their composition or chemical action. Many of the articles sold for this purpose contain ingredients prone to fermentative action in the mouth, such as orris root, starch, sugar, etc., and, in addition, pumice stone, cuttlefish bone, and other harmfully abrasive substances.

Listerine Tooth Powder, possessing neither of these objectionable qualities, very acceptably meets all the requirements of a frictionary dentifrice, and promises to give much satisfaction to those who employ it, in conjunction with a mouth-wash of Listerine, suitably diluted.

To dental practitioners of record, the manufacturers will be pleased to send a supply of samples of Listerine Tooth Powder for Distribution to patients.

Lambert Pharmacal Co.
Saint Louis

THE DENTAL SUMMARY

Marriages.

September 1—Dr. St. Amand, Babylon, N. Y., and Miss Grace M. Chase, Scranton, Pa.

September 13—Dr. J. Howard, Georgetown, Ill., and Miss Maud E. Dukes, Georgetown.

September 22—Dr. R. S. Maloney, Albion, Ind., and Miss Harriett V. Conlogue of Kendallville, Ind.

September 28—Dr. Wm. A. Hart, Lapeer, Mich., and Miss Grace Higbee of Ionia, Mich.

October 1—Dr. H. G. Johnston, Germania, Iowa, and Miss Marie A. Legge of Iowa City.

October 1—Dr. Edward T. Keating, Monroe, Mich., and Miss Harriett Graessley of Monroe.

October 6—Dr. Roy N. Leezer, Portland, Oregon, and Miss Florence Batstone of Portland.

Deaths.

September 11—Dr. Karl Grempler, Baltimore, Md., paralysis, aged 75 years.

September 12—Dr. B. F. Gibbons, Warren, Ohio, aged 76 years.

September 12—Dr. J. T. Huston, Galva, Ill., apoplexy, aged 52 years.

September 15—Dr. Wilmot S. Knapp, New Orleans, La., aged 43 years.

September 16—Dr. Matthew L. Nichols, Central Village, Conn., aged 86 years.

September 17—Dr. Geo. W. Coleman, Lansing, Mich., heart failure, aged 61 years.

September 17—Dr. E. C. Merrihew, Salt Lake City, Utah, cancer, aged 44 years.

September 20—Dr. Emory T. Phillips, Houston, Texas, malarial fever, at Denver, Col., aged 38 years.

September—Dr. Charles Fiske, Lexington, Mass., aged 77 years.

September 27—Dr. Maskell F. Carrl, Providence, R. I., at Kingston, Mass., aged 68 years.

September 28—Dr. P. S. Cassidy, Philadelphia, Pa.

October 1—Dr. Paul Davidson, Scranton, Pa., at Cambria, Pa., paralysis, aged 30 years.

Robberies.

September 10—Dr. C. K. Bryant, Hartford, Conn., \$20 worth of gold filling. Dr. Hugh Dryhurst, gold worth \$50.

September 11—Two dentists of Springfield, Mass., \$110 worth of gold fillings.

September 11—Dr. B. Featherstone, Red Wing, Minn., \$40 worth of gold; Dr. C. A. Lovgren, gold crowns and bridgework valued at \$70 and Dr. F. E. Anderson, bridgework worth \$70 and crowns, gold and platinum valued at \$60.

September 16—Dr. E. L. McCoy, Dallas, Texas, several valuable instruments.

September 18—Dr. Addison, Fargo, N. D., \$25 in gold; Dr. Albert Hallenberg, about \$60 in gold.

September 22—Dr. W. Naibert, Cedar Rapids, Ia., gold leaf and instruments valued at \$150.

September—Two dentists of Nashua, Ia., \$300 worth of material.

September 24—Billings-Marshall Dental Supply Company, between \$600 and \$1,000 worth of porcelain artificial teeth; Dr. Parker, \$15 worth of gold; Dr. N. C. Christensen, \$40 worth of gold, silver and platinum; Dr. W. W. Peebles, \$20 worth of gold; Dr. J. W. Novak, \$30 worth of gold.

September 25—Dr. T. T. Umbarger, Springfield, Mo., about \$20 worth of gold; Dr. H. C. Kitchell, loss \$15; Dr. H. Boatner, loss about \$20.

September 26—Dr. Frank E. Blakeslee, Buffalo, N. Y., \$300 in cash and gold; Dr. James M. Burke, \$45 in cash.

September 26—Drs. Thompson and Robertson, Hamilton, Ontario, quantity of gold taken.

September 27—Dr. W. A. Winters, New Castle, Ind., \$125 worth of finished work and a quantity of gold leaf.

September 28—Dr. E. D. McLaughlin, Greensburg, Ind., about \$85 worth of gold.

September 28—Dr. J. N. Bolte, Lapulpa, Okla., about \$500 worth of fine instruments and a sum of money.

September 30—Several dentists of Greensburg, Ind. The stolen property included a gold bridge plate, partly made, valued at \$40, a 22-karat gold bridging, worth between \$40 and \$50, and dental gold from one place, which has an estimated value of \$20.

October 1—Three masked burglars bound and gagged Dr. William M. Herrington, a dentist; Mrs. Herrington and Ethel Price, a servant, and escaped with jewelry valued at \$1,200. The robbery occurred at the Herrington residence, No. 24 Hartford street. The robbers entered through a back door, which had been left unlocked. They first bound Miss Price to a bedpost and stuffed a handkerchief into her mouth. Then they ascended to the room of Mr. and Mrs. Herrington, where they quickly secured their victims with ropes. The men worked virtually in the dark, using flashlight lanterns to guide them. They were armed with a revolver, a piece of lead pipe and a pair of fire tongs.

Dental Examinations.

North Dakota—25 applicants; 13 successful.

In these days of rush and worry, it is often hard to coax a laugh. *Judge's Library* will do it if anything can.

Antiphlogistine

(INFLAMMATION'S ANTIDOTE)

WHAT IT WILL DO



Antiphlogistine possesses all the requisites necessary to counteract the various in-

flammatory conditions incident to alveolar abscess, pericementitis, gingivitis, periostitis, actinomycosis, facial neuralgia, inflamed gums caused by pyorrhea alveolaris, glandular inflammation caused by impacted third molars, and fractures of the jaw. When Antiphlogistine is applied early, dental surgeons have noted that resolution without suppuration has been the rule.

HOW IT SHOULD BE USED As soon as the inflammation is discovered, Antiphlogistine should be applied externally to the affected part, thick and hot. It should be heated in the original container by placing the can in a receptacle containing very hot water, allowing no water to enter the can. The dressing must be at least one-quarter inch thick, as hot as can be borne comfortably and should be covered by a liberal amount of absorbent cotton and a bandage.

THE DENVER CHEMICAL
MFG. CO. : NEW YORK

Think About It---YUKATOL

When you use a local anaesthetic your first thought must be absolute safety and freedom from injurious effects to your patient. This **YUKATOL** offers to you in every respect. No Toxic effects. No sloughing of the gum. Contains smallest quantity of cocaine to produce desired results. A trial will convince you of its superiority as a local anaesthetic. The regular retail price of Yukatol is 2 oz., \$1.00; 12 oz., \$5.00. However, if you have never used Yukatol, we will send you

A Full Size 2-ounce Bottle, Express Paid, for 50 cents.

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BUTCHERS' CARBORUNDUM WHEEL TRUER AND DRESSER



Pat. Applied For

better work, and will increase your popularity by making operations less painful to your patients. Send for descriptive circular. Order through your dealer or will be sent direct upon receipt of price.

Price complete, \$3.50

Extra Mandrels, 15 cts each.

Manufactured by H. GUY BUTCHER COMPANY, URBANA OHIO

SPECIAL FREE OFFER:—Screw Mandrel made especially to use with DRESSER, given free with every instrument

THE DENTAL SUMMARY.

Patents of Interest to Dentists Recently Granted.

932133—Machine for contouring crown-matrices, F. O. Jaques, Jr., Cranston, R. I.

932875—Automatic dental advertising device, A. Lavallee and G. J. Constantineau, Lowell, Mass.

932508—Dentist's casting appliance, N. H. Smith, Seattle, Wash.

932833—Attachment for tooth-powder receptacles, J. M. Robin, New York.

933718—Dental tool, T. Mahoney, Los Angeles, Cal.

934958—Tooth-regulating device, C. S. Case, Chicago, Ill.

934636—Forming tooth-crown matrices, F. O. Jaques, Jr., Cranston, R. I.

Copies of above patents may be obtained for fifteen cents each, by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.

Texas Dental Examiners.

The governor September 17, appointed the following board of dental examiners: R. D. Griffith, Paris; C. M. McCauley, Merkel; R. G. Duff, Greenville.

Louisiana Dental Examiners.

Governor Sanders filled two vacancies on the State Dental Board, September 23. He appointed Dr. Wallace A. Wood of New Orleans, to succeed Dr. John E. Woodward, resigned, and Dr. Clement V. Vignes, also of New Orleans, to succeed Dr. J. Sidney Couret, whose term had expired.

Pennsylvania Dental Examiners.

Governor Stuart on October 7 announced the appointment of the following members of the State Board of Dental Examiners: G. W. Klump, Williamsport; J. D. Whitman, Mercer; A. H. Reynolds, Philadelphia; and T. A. Hogan, Pittsburg.

Chas. Robinson, aged 22, of Buckingham, Que., died in a dentist's chair September 12, while under chloroform for the extraction of six teeth.

Dentist Leaves for China.

Dr. W. A. Smith, who has practiced dentistry in St. Louis for a number of years, and who for the last two years has been clinical instructor in the Washington University Dental College, is on the way to China to take charge of the dental practice of Dr. Warwick Winston, formerly of the Washington University faculty, who has spent fifteen years in Shanghai, China, and who has returned to St. Louis with his family to educate his children.

"Ether Day."

There can be few occasions which more deserve to be perpetuated in the minds of men than that on which was first demonstrated the possibility of anæsthesia during a surgical operation. It is this occasion—or rather its anniversary—that the Massachusetts General Hospital celebrates as Ether Day. For it was in the theatre of that hospital, on October 16th, 1846, that William Morton kept a patient anæsthetised with ether while John Warren operated.

"Medical Sociology," by James Peter Warbasse, M. D., is a rather unusual book which was published lately by D. Appleton & Co. It is divided into two parts: the first deals with medical matters of more vital importance to the general public; the second part deals with matters of more especial concern to the physician.

South Dakota Dental Examiners.

Governor Vessey today appointed as members of the state board of dental examiners, F. N. Palmer, Madison; J. G. McCartney, Mitchell; G. W. Collins, Vermillion; Ernest H. Wilson, Huron; and E. E. Field, Sioux Falls.

Central Pennsylvania Dental Society; these officers were elected: President, Dr. J. A. Witter, Tyrone; vice president, Dr. C. F. Hager, Johnstown; secretary, Dr. H. E. Crumbaker, Altoona; treasurer, Dr. F. B. Evans, Altoona.

Parents who appreciate the value of good literature in the forming of high and manly ideals in the mind of the growing boy should put such publications as *The American Boy* (Detroit) into the hands of their sons at an early age. It is strong, vivid, entirely lacking in namby-pambyism, and is a delight to every boy who is favored by its monthly visits.

An error occurred in Dr. A. C. Runyan's able article in our October issue, which we greatly regret. Paragraph 2, page 791, should read: "Popular and Literary Drawings," instead of "Little Drawings." The book of drawings referred to should be in the hands of every dentist. It is a valuable assistant to every member of the profession who realizes the importance of educating his patients. Your dealer can supply it.

Dr. J. R. Goodrich has removed from his old quarters at 430 E. 47th street, to No. 1351 (new number) E. 47th street, between Lake and Kenwood avenues, Chicago.

Classified

FOR SALE—Dental office and practice. About 9000 population. Several good small towns and one of the best farming counties in the state to draw from. Will sell cheap if sold soon. Address N. Southern Ohio, care Dental Summary, Toledo, Ohio.

FOR SALE—Best practice and equipment in the best city of its size (8000) in Indiana. Doing business of more than \$3000. Change of climate necessary. Address Health, care The Dental Summary, Toledo, Ohio.

FOR SALE—Good practice and strictly A1 equipment in best building in Toledo; fine rooms, moderate rent, long lease. A splendid opportunity for a young man to step into a nice practice. Will sell at invoice. M. M. N., care The Dental Summary.

FOR SALE—\$3,000 Ethical practice in Pennsylvania. Modern equipment; excellent light and location; 7-room flat; rent \$25.00. Practice and equipment \$1,000 cash. Best reason for selling. Ethical, care The Dental Summary, Toledo, Ohio.

FOR SALE—Office and equipment of the late Dr. R. D. Wallace, Scio, Ohio, for sale. Fine location. Terms reasonable. Write G. D. Custer, M. D., Scio, Ohio.

FOR SALE—Newly equipped office in a growing Northern Ohio railroad town of 3500. Rich farming country. Equipment includes Favorite Columbia chair, Weber spittoon, cabinet, engine, bracket and table, laboratory outfit, etc. Cash practice. Fees good. Business \$1600 first year and increasing. Reason for selling, ill-health. \$500 buys if sold at once. Address Bargain Np., care Ransom & Randolph, Toledo, O.

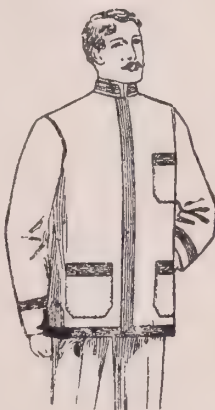
FOR SALE—Dental practice of three thousand dollars per year, together with residence worth \$3000, in best town of 2700 inhabitants in Southern Ohio. Big territory; little opposition. Price for both, \$3200 cash. Will bear strictest investigation. Do not answer unless you mean business and have the cash. Address N., "Southern Ohio," care S. A. Crocker & Co., Cincinnati, Ohio.

SCHOLARSHIP FOR SALE—An opportunity is presented to obtain a scholarship in a prominent medical college upon advantageous terms. Address Dr. R. C. Brophy, Elgin, Ill.

WANTED—Thoroughly experienced, all-around operator, of good appearance and character, registered in Ohio. Write fullest particulars as to qualifications and references. Quality rather than quantity of work desired. State salary wanted. Address N. S. M., care The Dental Summary.

PARTNER WANTED—I want a good partner. Will take practitioner's course and need help. Best trading point in wide range of territory. Only dentist in 25 miles. Address: Box 233, Maysville, Okla.

OPPORTUNITY—I have an extra good outfit for a good all-around dentist who wants a fine location; good railroad town. Population 5,750, with one dentist. Cash required not exceeding \$300.00; balance on time to suit, or percentage. Be sure you are practical; one who has used N. O. gas for extracting preferred. Correspond with J. E. Swallow, Hagerstown, Md.



"Every Coat We Turn Out a Winner"

Dentists Office Coats for Professional work, made of white or fifty other shades of washable materials, fast colors, and thoroughly shrunk before made up. All coats made to measure and in any style desired.

We pay express or postage to any part of the world.

Write for samples, styles and prices free upon request.

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Manufacturers of

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do Foil: very soft PLATINUM SCRAP PURCHASED
CROSELMIRE & ACKOR COMPANY. 42 Walnut St., Newark, N. J.

By the way—Have you tried OXPARA?

MICHIGAN UNIVERSITY
DENTAL DEPARTMENT

The next session begins Oct. 5 and continues to June 30, 1910. A high school education or its equivalent is required for admission.

New building with up-to-date equipment.

Strong faculty of professional teachers.

A beautiful city and a great university with 5000 students; low expenses.

For particulars address

Dental College, Ann Arbor, Mich.

THE DENTAL SUMMARY.

Three American Thanksgivings.

1630—"We found the colony in a sad and unexpected condition, above eighty of them being dead the Winter before and many of those alive were weak and sick. All the corn and bread among them was hardly sufficient to feed them a fortnight."... "When I could have meal and water and salt boiled together it was so good who could wish for better?"... "The women at low tide gathered clams and mussels from the frozen beach, ate ground nuts, acorns and scant fish."... "In almost every family lamentation, mourning and woe was heard and no fresh food to be had to cherish them."

1850—"For our Thanksgiving dinner we had Winter soup, which is made from beef with cabbage, carrots, sweet marjoram, parsley, turnips, potatoes and onions; fresh codfish fried, boiled ham, roast turkey with cranberry sauce; oyster pie; potato snow, turnips, parsnips, Winter squash, cocoanut pudding, lemon pudding, mince pie, calves'-foot jelly."

1909—"For my family dinner, Thanksgiving, I have had a larger top made for my round table, as I expect twenty guests. I am using the bay-tree decoration. I will have bonbons and crystallized fruits in tall silver compotes, and salted nuts in individual dishes of pierced silver.

"I will use my handsomest table-cloth, ornamented with wide bands of filet lace and my monogram, and my large dinner napkins with the monogram; white china with my monogram in gilt, and glasses of rock crystal. I will add a touch of color to the group of glasses by using one Venetian, pink, with gold decorations. The name-cards bear turkeys done in water-colors and signed by the artists' name. These cards are tied with red, white and blue ribbons. During the dinner a harpist will play patriotic airs and simple folk-songs. We will have dinner at seven o'clock on account of the football game in the afternoon."—*The Delineator* for November.

The day of enlightened individualism—of genuine individual freedom—is just dawning in the East. The future will see much less government, much less conformity to conventional pattern and type, and much more of individual freedom—individual initiative. Many intelligent people see and dread the dawn of the new day, and, like Moses, they may hope to see, but not to enter, the promised land. The one reason why socialism has failed and must continue to fail is, that it seeks to impose more restrictions, although different ones; seeks to bring about greater conformity to type. It stands in the way of progress, and, as is always the case, must perish under the wheels of the Chariot of the Sun.

Cause of the Sensitivity of Dentine.

Starting with the assumption that dentine is a truly sensitive structure—a fact that physiological research has shown and which no dentist will doubt—that in all known instances sensory impulses are conveyed either by nerve-fibres or allied epithelial cells, W. J. Law (Sheffield) argues that the most likely cause is the presence of sensory nerve-fibres in the dentinal tubules. Photomicrographs of sections of teeth stained by the methods of Golgi and of Bethe have been made and from these it is inferred that large numbers of nerve-fibres run from the medullated bundles of the pulp right up to the dentinal edge, and in the case of Golgi specimens into the dentinal tubules, thus agreeing with previous work by Oscar Romer, but differing from him in that they were also found in the roots of teeth. Also in neither series was there found any trace of any such plexus or interlacing of nerve-fibres as has been described as the plexus of Raschkow, and it was suggested that these were connective-tissue bundles.—*British Dental Journal*.

Athens has sixty native dentists. There are also three foreign dentists, who have modern equipments, charge high prices, and have so many clients that they are obliged to turn some of them away.

Tooth-Brush Drill for Scholars.

The question of introducing tooth-brush drill into the ordinary school work is under consideration by the educational authorities of Great Britain, as in the few cases where it has been established, valuable results have been obtained in improved conditions of health.

If a realization of individual responsibility—of how our own acts and thoughts limit our growth morally and mentally—were general in the world, what a shaking up of dry bones there would be! Thousands of doctors, preachers and teachers would be appalled by a close view of their hardihood in following their professions, and we would see a world-wide scrambling among them, a frantic effort to fit themselves to meet their responsibility.

The body of Dr. Henry N. Stone, 55 years old, dentist of Newburyport, Mass., was found behind a stone wall along the main highway between Ayer and Harvard. There were bruises on the body. As the dentist's money is missing, it is believed he was killed by robbers.

Dr. A. H. Woodward, a dentist of Alexandria, Ind., has received the appointment as central district deputy of the Elks from the grand exalted ruler.

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EDUCATE THE PEOPLE

TO OUR READERS—Cut out any of the items printed under this heading, take them to your local newspaper and have them printed as news matter

Eighty per cent of our school children at the age of 12 years have acquired injurious conditions of the mouth and teeth, many of which are past repair. The first permanent molar is usually badly broken down, the rest of the teeth do not meet and fit into their mates properly, making the thorough chewing of food impossible, the upper jaw usually projects much too far over the lower, disfiguring the face, while many of the teeth are in various stages of decay.

Surely this is a deplorable condition just at the age of when the system needs every aid possible to carry the child safely through this most critical period. And this does not apply to a stray case here and there, but to 80 per cent of our school population—and the condition steadily is growing worse.

Every decaying tooth or root is a menace to the health of the growing child. Decay means putrefaction; putrefaction is caused by a specific bacteria; this germ is poisonous in the extreme, and does not kill the child quickly simply because it is taken into the system mixed with food and water—diluted, so that its deadly effects are the slow undermining of the victim's health and the dwarfing of its growth and development.

It is small wonder that there are so many anæmic, half-nurtured children of school age, when this is the condition of their mouths—the gateway of the body, through which must pass every atom of food on its way to the digestive tract at the end of the alimentary canal.

Parents would resent indignantly and forcefully an accusation that they were deliberately adding virulent poisons to every mouthful of food given to their children—yet that is exactly what it amounts to. The result of deliberately adding poisons to the food in no way differs, except in intention and method, from allowing the child to mix its food with poison originating in decaying teeth in the mouth.

Thousands of cases are known of children between the ages of 8 and 12, who, while constantly under the care of the family physician, remained in a most unsatisfactory condition of health until, by some fortunate combination of circumstances they have been taken to the dentist, and their teeth properly treated, with the result of an immediate improvement in health, growth and development, physical

and mental. More diseases of children are daily being traced directly to unsanitary conditions of the teeth. An eminent Chicago physician does not hesitate to express the opinion that, at no distant date, most of the diseases that carry off our children or leave them to a life of suffering and under-development, will be known to have their origin in the mouth and teeth, conditions that a very little care at the proper time will make impossible.

Suppose it were possible to remove from the mouth the poisonous germs resulting from decaying teeth and prepare it in such manner as to be seen and understood by parents; and suppose that such parents were asked to mix those germs with food and pack the mass between the teeth of their children and leave it there until, by the completion of the process of decay, it should pass into the alimentary canal and thence into the circulation. Of course, no parent could be induced to do such a thing deliberately, knowing results; yet, in effect, that is exactly what thousands upon thousands of parents are doing ignorantly, entailing malformation, suffering and death upon their helpless offspring. The proper education of the parent will put a stop to this slaughter of the innocents, improve our race beyond measure, and result in untold good to thousands yet unborn.

How many parents know that the first teeth are of much more importance to the future welfare of the child than the second set? How many of them know that the perfection and usefulness of the permanent set depend very largely upon the care and preservation of the temporary set? We are very sure that this important knowledge is in possession of very, very few. Otherwise it is hard to understand how parents persistently and almost unanimously neglect the care of the temporary set, allowing them to fall into disuse and decay; to the permanent, often irreparable detriment of the health, beauty and usefulness of the child, as is now known to be the case with 80 per cent of our school children.

Twice One Not Two.

"Jones bought his wife a toy terrier, didn't he?" "Yes, and she gave him an English bulldog." "So each of them has a dog now?" "No, he has one — she hasn't!"

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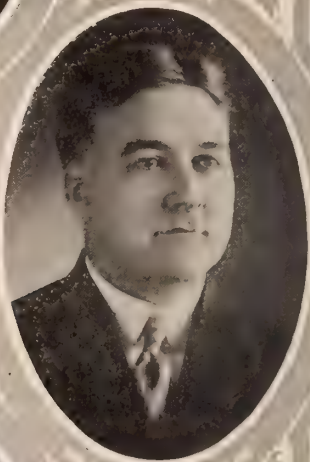
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PROXIMAL CONTACT *

By Dr. Samuel H. McAfee, New Orleans, La.

THERE are few things of more importance in operative and restorative procedures than proximal contact. Its importance is not confined to filling operations. It should receive the same consideration in crowns, bridges and partial dentures, and should never be absent where it is possible to obtain it. And even in some cases we are justified in cutting cavities into sound teeth in order to produce contact by properly inserted fillings or inlays, such procedure being the choice of two evils.

And of the three most important factors in procedures involving proximal surfaces, it is, perhaps, the one most neglected by a majority of operators. Perfect proximal contact is indispensable to the comfort of the patient during mastication, preventing, as it does, the packing of food between the teeth—especially in the molar and bicuspid regions.

It is necessary to the integrity and well being of the interproximal gum, the constant wounding and gradual destruction of which not infrequently provokes a condition of pyorrhea. It is necessary to the preservation of the proper relation of the teeth, one to the other, both as regards

*Read before the Louisiana State Dental Association, 1909.

their alignment in the arch, and in articulation. Its absence not only robs the patient of comfort to which he is entitled, but provokes pernicious habits in the use of such teeth, causing at times the abandonment of a whole side of the mouth, incites imperfect mastication of food, with consequent mal-digestion, mal-assimilation, mal-nutrition, toxemia and all the ills that follow in its unhappy wake; leading on as an incipient cause perhaps, to death and damnation.

Wherever I find among the bicuspid and molars a lack of proximal contact, where it is possible to restore it, I invariably show it to the patient, in the hand mirror, and ask, "Are you not annoyed with food packing here?" In the great majority of cases the answer is affirmative. Selecting some other point where there is perfect contact—preferably between two sound teeth—I explain Nature's way of preventing such trouble. Most patients think it is because the teeth are too close together. It is surprising how ignorant patients are on this subject of proximal contact, and that many operators are indifferent about it is borne out by the numbers of flat surfaces and food accumulating spaces one may find if he forms the habit of looking for them.

Wherever such places are found, their correction should be strongly advised, even though it may necessitate the removal of what may otherwise be beautiful work. In most instances patients will be grateful for relief.

Perfect polish and perfect proximal contact are ideal and should be striven for, but indifferent polish and perfect proximal contact are, in my opinion, preferable to the reverse, if we cannot have both. Perfectly polished flat surfaced proximal fillings, failing in contact, will last longer than the other kind, because their margins are scrubbed by the impact of food and the inevitable use of the splinter, floss or other means to which the patient must resort if he chews, and would be happy afterwards.

But the discomfort to which the patient is constantly subjected during the life of such an operation, the destruction of the interproximal gingiva, together with the probable induction of pyorrhea, and the collapsing together of the teeth in time, make the failure to produce proximal contact wherever possible, nothing short of inexcusable negligence, or deplorable lack of skill on the part of the dentist.

Dr. Black says, the proper form of proximal contact is one similar to two marbles touching (P. P. 296 Vol. II). Below this, the filling, crown, or whatever it may be, should be rather concave than convex. Broad flat contacts are sure to lodge food, and are otherwise bad for the general hygiene of the margins and gingiva. I agree with him.

PRELIMINARY SEPARATION NOT NECESSARY.

Preliminary separation of bicuspid and molars is seldom necessary in the making of proximo-occlusal fillings perfect in proximal contact and otherwise. In fact, I believe it doubtful as to whether or not it is not undesirable, except in cases where it becomes necessary to regain space lost by teeth collapsing together, where contact has remained destroyed for a long

time. For instance, when proximal cavities in the teeth of younger patients have been filled with cement, the cement wearing away and the teeth closing up.

In teeth that stand in normal relation, the ideal proximal filling is one that, when finished, simply *touches* at the opposite point of contact. It should do no more, no less. To wedge normally disposed teeth apart, make proximal contacts in excess of normal, so that when finished and the teeth released they do not go exactly back to their original position, being held apart, however slightly, is to interfere with Nature's arrangement of the teeth—may be not much, but some. Nature has to set to work to absorb and rebuild tissue in order to accomodate the new state of affairs. Occlusal planes are disarranged and have to become readjusted—not much, perhaps, but some. When you wedge teeth apart, build out proximal surfaces and polish them, it is guess work. You have no positive means of knowing whether you have too much or too little. Would it not be more scientific to *just* reproduce the normal contact just as Nature originally had it? The time will come when the preliminary wedging of teeth with its distress and discomfort to patients will be relegated to the junk heap of obsolete procedures, to keep company with the McArthur filing calamity and other blots on our scientific 'scutecheon.

There is no pressure maintained at proximal contact in the normal arch. The teeth simply touch and therefore there should be no plus to an artificial contact; neither should there be any minus. I believe you will agree that this is the ideal view to take of it. If so, then I ask, should we not always be governed and guided in all our efforts by this same beacon—the ideal? Should we not fix in our minds always the ideal thing accomplished in the ideal way? Not always possible of attainment, perhaps, but the higher our ideals, the nearer perfect our results. To wedge teeth apart for days or even hours, get them good and sore and then break into, prepare and fill cavities, guessing at the contour and proximal contact is certainly not *ideal*. I am sorry I cannot tell you an ideal method. I wish I knew one. However, I will make a few suggestions along lines which have helped me in obtaining proximal contact and polish in bicuspid and molars without preliminary separation. There are exceptions to most everything, but I shall not enter into the exceptions and will pre-suppose we are dealing with an average near-normal arch. In the first place, I never fill two simple proximal cavities as such, in bicuspid and molars. I either let them alone or extend one or both into the occlusal surface. Simple approximal fillings of this class constitute the greatest percentage of failures of all filling operations. Even though you get perfect marginal lines in sound enamel, these lines fall far short of areas of safety and early recurrence of decay is inevitable. This, plus the difficulty of doing perfect work here without *extreme* separation, is sufficient to eliminate such operations from the range of anything approaching ideal.

PROCEDURE.

Therefore, to fill two such cavities, I would certainly open at least one of them—through the occlusal surface—preferably the larger one, of course. If no special difference exists, then by all means the cavity which would be the more difficult if the other did not exist. Certainly no preliminary separation is necessary to accomplish this. In fact, it is undesirable since the tooth will either be sore or the patient will have worn a wedge long enough for it to get over the soreness—a doubtful choice of evils. Having elected to open one cavity through the occlusal, open it well, extending it to lines of safety forming an occlusal step, if necessary. Were it possible to make it, a microscopical study of the affected surface would often lead us farther than apparently necessary by showing a considerable zone of disorganized enamel around the cavity proper, such enamel being dangerous ground on which to lay the marginal lines of a filling.

This opening will gain us access to the other cavity which may be successfully prepared and filled, either as a simple or compound cavity. The first filling made should be finished and polished before the final preparation of the other cavity. If filled with amalgam, wait until the next sitting before going further. This holds good even though they both be large approximo-occlusal fillings. The first filling must, of course, present the proper contour and proximal contact point. If the remaining cavity is to be filled with *an inlay*, it is an easy matter to produce perfect proximal contact, and polish, and in such a case separation is wholly undesirable, since it makes ideal contact a matter of guess work.

INLAY CONTACT.

In making an inlay for such a case, I would form the wax model sufficiently minus of contact to insure its easy withdrawal after which I would add wax, plus at the point of contact expecting to gradually trim off gold subsequently until the filling just went to place, or what is just as good, leave the wax contact minus and flow a little solder on the casting at the contact point and fit it in the same way.

This is even better if the casting be made of pure gold in that it gives a harder contact and adds stability to the softer gold. However, I no longer make inlays of pure gold where they are exposed to the stress of mastication. Pure gold castings, being thoroughly annealed, are almost as soft as lead and offer poor resistance to masticating stress and little protection to frail margins and walls. They soon become battered up. The surface of a pure gold casting is by no means as hard as a condensed or malleted cohesive gold surface. In the above described operations separation of any kind is positively a detriment to ideal results, especially so if the patient's comfort and time, as well as some of your own, is to be considered.

GOLD AND AMALGAM FILLINGS IN CONTACT.

You might ask me if I would put gold and amalgam fillings in contact.

Certainly, so far as any fear of galvanic phenomena endangering the pulps is concerned. Such results are, in my opinion, nil.

In all operations involving two approximating proximal cavities to make and finish one of them, usually the more difficult one, before proceeding with the other is the safer plan. The filling of the second cavity becomes a procedure the same as though the other tooth had no approximating cavity.

Now say we are to fill this second cavity, or one approximating a sound tooth, with amalgam, producing proximal contact and finish without separation. Having opened through the occlusal surface and given it the final preparation I would first apply a matrix, encompassing the entire cavity, straining it out into contact with the approximating tooth or filling, or as nearly as it is possible to do so. It should not fit too closely at the margins of the cavity. Personally, I use the J. W. Ivory matrices. (There are other good ones.) Matrix adjusted, fill the cavity with amalgam in the usual way—that is, if Black's may be so considered.

Now, just before removing the matrix with a sharp properly shaped excavator, cut a box-shaped cavity in the amalgam just where the proximal contact should be. Now remove the matrix. To do this the matrix band should be clipped off either lingually or buccally with sharp scissors as close to the tooth as possible. The clipped end should be grasped with pliers to straighten out any curl the scissors may have given it. With a flat beaked pliers grasp the other end of the band, and holding it securely steadily carry it toward the gum and out laterally—not down between the teeth, for fear of dislodging some of the amalgam. Now, work into the small box-shaped cavity in the amalgam, more amalgam, a little softer consistency, if you wish, than that previously used. Beginning with small pieces and carefully burnishing this in it may be done without disturbing the larger portion, and the matrix having been removed this amalgam may be built in *exact contact* with the polished opposing proximal contact. This you could never do with the matrix in position. This second addition of amalgam can be worked around the edges with suitable delicate burnishers and so finished as to become a solid part of the larger portion, and yet remain in exact contact with the other tooth or filling, the surface of which being smooth produces a smooth surface on the added amalgam so that to subsequently polish just at the contact point requires nothing that will cut it—the contact—down or reduce it. The cervical and other margins of the filling should *now* be trimmed down without disturbing the contact point. Never pass a disk or strip over the point of contact. By passing a pointed polishing strip through the proximal space either buccally or lingually and grasping it with the pliers, the surplus amalgam may be worked off at the cervical margin and with sharp trimmers the remaining margins approximately finished *now*, before the amalgam sets, for “Tomorrow it will be very hard.” After it has thoroughly hardened—after a day or so—the filling should, of course, be given a final polish. It is more necessary to

thoroughly polish an amalgam filling than any other. Pointed strips of finest grit may be passed through the interdental space either buccally or lingually, for which the new form of pliers by Ivory are useful. Proximally, trimmers are useful here also, but no strips or disks should be passed over the contact point. This may be simply burnished by drawing a very thin, flexible burnisher once or twice between the teeth. They will spring apart sufficiently to admit it, and it will produce a burnished finish just where it is most needed.

GOLD FILLINGS AND CONTACT WITHOUT SEPARATION.

Fillings made of foil or cylinders by condensation may also be made reproducing proximal contact—without separation. Should there be two cavities where you elect this procedure, first fill one and finish it, and here is where I give the benefit of the doubt many times to the cast filling. To fill the second cavity with an inlay and reproduce proximal contact without separation is an easy matter, provided you have a suitable cavity for an inlay, or will have to cut away enough tooth structure to get one. The making by the condensation method and finishing of the second filling without destroying or failing to get the contact point is a difficult problem—one greatly simplified by the inlay.

However, having elected to fill the second cavity with gold by condensation, some separation will be demanded when you come to the final steps, but this can be *immediate* separation gotten with a well adjusted mechanical separator—not *preliminary* separation by wedges with its attendant soreness and annoyance. You don't need much—just enough to insure polish of the *contact point* without its destruction. In fillings of this class I begin with a matrix. A matrix should have stability, but should never fit too closely at the margins. It should allow a good surplus of non-cohesive gold (or amalgam, for that matter,) to be crowded over the margins. It should simply be an *aid* in placing the filling; not a *mold* for the finished filling. The gold should be held by the cavity from the beginning—not by the matrix—and should stand on its own merits from the start.

METHOD OF FILLING.

I fill the first two-thirds, or so, of the cavity with non-cohesive gold cylinders, finishing the contour, contact point and occlusal area, if any, with cohesive gold. For this I use No. 5 Cohesive Gold Foil, folded to four ply and cut into strips from 1-16 to 1-4 of an inch in width. This is thoroughly annealed by heating evenly almost to the fusing point, without exposure to the flame. All electric annealers are useless to me. Each piece of gold is annealed just before it goes to the cavity. The cohesive portion of the filling is anchored independently; usually in the occlusal step. Little reliance should be placed on the union between non-cohesive and cohesive gold, although there is enough to start the cohesive portion without previous provision therefor. Especially so if the last few pieces of non-cohesive gold are simply warmed—not annealed—before they are placed.

After the cohesive portion is well started and firmly anchored, the matrix should be removed and the non-cohesive portion carefully condensed and burnished down. This anticipates and renders easy the subsequent operation of polishing the cervical margin in particular. The matrix now removed, the previously selected and adjusted separator is applied. The cohesive gold is now built down over the non-cohesive to well below where the contact point is to be—being malleted against the non-cohesive portion toward the axial line of the tooth at an angle of say 45 degrees, and from there it is built up and outwardly until it touches at the opposite tooth's contact point. In this operation a right angle engine or mechanical mallet operating a very sharp, thin foot plugger is very useful. (Such a one is the Avil Mallet. It resembles a right angled hand-piece. The separator having been given a turn now and then will have gotten space enough to allow you to just polish the contact point. Never swipe off the whole surface filling with a sandpaper disk. Separation is not at all necessary to polishing the margins and other parts of the filling, which may be done with strips and proximal trimmers. A short mandrel in the right angle hand piece and *small* disks being useful here. Polish all around the contact point first, then *just* polish it and quit.

PYORRHEA ALVEOLARIS—A PLEA TO THE GENERAL PRACTITIONER *

By E. E. Voyles, D. D. S., Indianapolis, Ind.

AS what I shall have to say is largely the relating of personal experiences and beliefs, I trust you will pardon a freer use of the pronoun *I* than may appear in good taste.

I wish only to appeal to you in a heart to heart talk on what I believe we, as busy dentists, can and should do with pyorrhea.

The subject of pyorrhea alveolaris offers a wide and fertile field for investigation and discussion, so no attempt will be made to cover the subject, but it will be viewed more from an empirical standpoint. I shall not attempt to discuss its etiology, nor will I quibble with anyone over the name; but will suffice to assume that the subject under discussion is an inflammatory condition about or near the necks and roots of the teeth varying in degree and extent from the first formation of pus in the soft tissues to necrosis of the alveolar process.

I will go no further with its etiology than to assert that as a local causative factor there is always present at some stage of the disease certain mechanical irritants in the form of calcific deposits on the neck or roots of the teeth affected. This excludes those cases of traumatic origin such as too rapid wedging of teeth, too rapid moving in regulation and other injuries.

Where the elements of these deposits come from I do not know. Where

*Read before the Indiana State Dental Association, June, 1909.

they come from and why they are thrown down I leave to the investigation of men of more scientific turn of mind. What you and I can do in our daily practices to relieve this condition should concern us most.

I will endeavor to discuss the practical side of it under the subdivisions of Education, Instrumentation, Medication and their resultant Compensation.

EDUCATION.

For the last several years there has sounded the voices of eminent specialists teaching the doctrine of tooth salvation through oral prophylaxis and the treatment of pyorrhea. They have taught it in our colleges, in our society meetings, in our journals—and what is the result today?—A large majority of busy dentists still unconverted and the general public either skeptical or boldly atheistic.

We, as general practitioners, occupy a mediary position between the fountain heads of scientific research and the great body public whose misfortune necessitates our professional services. And is not our position a critical one? Is it not deserving of our most serious attention?

Unfortunately eminent specialists are few and in most cases hundreds of miles apart, so it is left to us to handle the innumerable cases of pyorrhea which come to every dentist. We are the moulders of public opinion as regards dentistry. We alone are responsible for whatever impression the public may have. Therefore, I wish to plead with you not to pass these cases by lightly, continuing to encourage skepticism on the part of the public but to assume, onerous as it may seem, the burden of carrying the best thought of the profession into our daily practice in this line as faithfully as we are wont to do in the more mechanical lines.

How often do we plead with a patient to save a remaining tooth to which we wish to attach a crown or a bridge? Do we as earnestly plead with them to save these teeth affected with pyorrhea? Do we not often lose sight of the fact that more teeth are lost through diseases of the periodontal membrane and adjoining tissues than are lost through dental caries? Do we not see people of all classes dropping their teeth out one by one? And why? Because in most cases they do not know any better than to lose them.

They have not been taught proper care to prevent conditions arising which cause the loss of teeth. Or, having become loose, they have been told that nothing can be done to save them. God pity the luckless ones! They come to our offices with the impression that oral hygiene and care of the teeth consist in visiting a dentist once a year and allowing him to take a scaling instrument and remove some of the tartar from around the necks of teeth and along the buccal surfaces of molars and taking a cup with pumice stone and rubbing the stains off the teeth for which the dentist charges the munificent sum of one dollar; or perhaps they have been taught by custom that dentists "throw in" the cleaning of the teeth in making a bill.

With such an impression the dentist is not likely to spend much time

in removing the concretions along the roots of teeth. So these people go on from year to year with accumulations slowly forming on roots of teeth causing irritation, inflammation and finally the adjacent tissues breaking down into pus.

When this patient visits the dentist with loosened teeth and pus exuding from the sockets, he or she is informed that nothing can be done to save them, that it is a case of pyorrhea alveolaris, the term itself being sufficient to strike dumb terror into the heart of the unfortunate one. The patient goes home with an indifferent attitude towards the care of the teeth, neglects his daily hygiene with the result that this condition grows rapidly worse until the affected teeth are lost, confirming the dentist's hopeless diagnosis.

Now, ladies and gentlemen, I protest against those of the profession who help foster this idea in the minds of the public, and assert that whoever does so is not practicing good dentistry; is not doing all for his patient's welfare that he can do. Much can be done in educating our patients to combat this condition. It is true, the average individual feels he has something for his money when he has a porcelain or a gold inlay; he can see it, but if the dentist spends the same amount of time in digging around the roots of teeth and charges him for the time spent, that is something he cannot see and it often takes some explanation before the patient feels that the dentist has done something that is really beneficial. He does not see the need of it so it devolves upon us to go into sufficient detail to convince him of the presence of such deposits and the necessity of their thorough removal.

Such people must be taught the importance of such care in order to have their teeth when they are 50 or 60 years of age. How often do we have people of 50 or 60 years of age come to us with beautifully constructed dental work in their mouths but with a story like this: "I do not understand how it is, Dr. So-and-So has had the care of my teeth for twenty years and still I have lost them one by one."

It is because he did not take enough time and care in handling those teeth, and he did not lay the law down to the patients, telling them the things they do not know, and telling them in such a way that years afterwards they will be glad he did so. True, many of the cases had their origin at the time we did not know as much as we do now. But in the light of present knowledge there is no excuse for the general impression that nothing can be done to prevent this. *There is not a case of pyorrhea which cannot be cured if taken in time and given proper treatment.*

These cases are not confined to one class alone. This condition is not confined to the "hewers of wood and drawers of water" but they come to us from all stations of life.

The first thing I do when a patient comes to me with a case of pyorrhea or with conditions leading thereto is to have a clear understanding with him as to the necessity of a positive radical treatment. If he seems to be

of a doubting mind and has been accustomed to having his teeth cleaned in twenty minutes by the use of a brush and pumice stone, I proceed to show him, not only upon his own teeth but also upon disassociated teeth which have been lost from this cause and which I have mounted for the purpose of demonstration. He is then in better position to understand why it requires so much time and why a larger fee is expected.

If I find, when a person comes to me with a loose tooth, that the best thing to do is to deprive that tooth of its pulp so as to divert the nourishment which ordinarily goes to the pulp, to the peridental membrane, then I destroy it and fill the root. If the tooth is too long I grind it off so it will not receive undue pressure from the opposing jaw. Whenever you have an inflammation around the external surface of a tooth, the peridental membrane becomes slightly thickened and the tooth rises or is pushed down from its resting place in the socket. So I simply take a wheel and trim it off so that the irritation of occlusion will not be kept up.

Another source of irritation which must be overcome is the wobbling of the tooth in its socket. It must be fastened to its neighbor in such way that it will not be working all the time in its socket and interfere with the healing process. The form of such fastening should depend upon the nature of the case as to the length of time it will be necessary to fix the tooth in position, the amount of stress the teeth are subject to, etc.

The extremely loose teeth thus secured, we are in a pretty good way to begin instrumentation for the removal of deposits.

INSTRUMENTATION.

As to the instruments, I do not think it necessary to have a complete set of any one man's instruments on the market. Every dentist should have a few instruments selected from whatever source he can find them best adapted to his own use. Instruments do not make success but the operator must cultivate the tactile sense which lies in the fingers so as to detect deposits although they be in the dark and sometimes covered with blood. What one man may use to advantage another may not. A few instruments deftly handled are better than tinkering with a whole set of somebody's else design. The essential thing is to have such a selection of instruments that the operator can reach every part of the tooth subject to deposit and every stroke of which can be made effective. Aimless scraping of the roots will do far more harm than good, as it will roughen the cementum and make additional work in polishing the surface. Whatever instruments used should be of sufficient rigidity, and of such shape that when you use a push motion alongside the root, you will do business every time you get it in the right spot.

If one is going to use a pulling motion then he wants to have that instrument of such shape that it can be introduced into the pocket beyond the deposit without too much injury to the soft tissues.

I first wash the debris out of the pockets with a warm saline solution slightly above the body temperature, then pack the gum tissue away with

ropes of cotton, using a few drops of 2% cocaine solution and adrenalin chlorid if the gums are very sensitive. Remove this packing in a few minutes and dry the root off by the use of blasts of air so as to see the extent and nature of deposits. One can better see the deposits on a dry surface, so I endeavor so far as possible, to keep the surface of the root dry with blasts of air applied and with cotton rolls to take up the saliva. Before beginning instrumentation I pass a dull pointed probe into the pocket, if there is room enough, and outline the extent of the pocket and also the location and extent of the deposit.

With suitable instruments for the case I scrape, gouge, cut and file around the root until the concretions are thoroughly removed, then fish out as much as I can with the instruments or blow them out with strong blasts of air.

If the pocket is opened freely, I follow this with warm solution of peroxide of hydrogen, which, effervescing, will bring the debris out, providing the opening into the pocket is large enough. If it is not, I make an incision in the gum at a point two-thirds the length of the root from the gingival line, introduce the syringe loaded with peroxide of hydrogen, send it in there; then all the fragments will come out at this opening in the gum. There is another advantage in cutting through there: we have an opportunity to discover whether we have removed all the deposits. If not, I take a pull-cut instrument which is curved so I can follow around the outside of the root and with a pulling motion detach the concretion.

If, when the patient returns in a few days, I find there is still pus coming from the pocket, I go up in there again expecting to find some particle of deposit which has been overlooked, and I usually find it. It requires just about as much skill to work around the roots of teeth that are covered with gum a long distance from the gingival margin to the apex—it requires just as much skill and delicacy of touch in order to detach those little fragments and granules as it does to do most any other kind of surgery. When doing this kind of operation I endeavor to observe as strict antiseptic precautions as conditions will permit, so as not to carry infection into pouches or pockets. I keep cleaning and sterilizing the instruments all the while.

Having gotten the debris all removed, I proceed to polish the surface, getting into the pockets with wood points which can be trimmed to fit the case and mounted in porte polisher.

In addition to these deposits of a sanguinary variety, we often have a slow progressive death of the edges of the alveolar process surrounding these teeth which must receive attention at this time if we expect results.

When I wish to remove the edge of this necrosed bone I use a spoon-shaped hand instrument, or if it becomes necessary, a pear-shaped bur. In using a bur, great care has to be taken not to touch the sides of the ends of the roots, for nature will not build soft tissue against a rough surface. There are those who have the idea that they can cut the end of a root off

in treating pyorrhea but they can safely bet their entire dental library against a dime novel that no matter how they cut, no soft tissues will attach themselves to the cut end of that root.

So if I find any serumal calculus on the end of the root and I can not get it any other way I cut into the gums, throw it back so I can get in there with an instrument and detach it, wash out the fragments, scrape away any portion of diseased process, get it thoroughly removed, then clean and disinfect the pocket with hot bichloride solution, 1-2000 if I am going to irrigate very much, or 1-1000 if I am going to use but little. When I use peroxide of hydrogen in these cases I often use it with the bichloride solution. I take one ounce of 1-1000 bichloride and one ounce of peroxide, put them together, making a 1-2000 solution which is strongly germicidal, and also has the cleansing properties of the peroxide.

I sometimes use a hot boracic saturated solution and get everything out when I am ready to treat for the renewal of the lost and diseased tissue.

(To be continued.)

IS THERE ANY NECESSITY FOR THE USE OF PROPRIETARY PREPARATIONS IN THE PRACTICE OF DENTISTRY?*

By J. P. Buckley, D. D. S., Ph. G., Chicago, Ill.

I HAVE heard of the hospitality of the Indiana dentists, and I have experienced the same on several occasions, but to ask me to take off my coat on a hot evening like this I assure you is the height of hospitality. I do feel at home and I am glad Dr. Hunt made the suggestion.

Dr. Logan, of Chicago, says that if a man has to apologize for what he has to say he had better not say it, and it is very seldom that I begin to read a paper or talk upon a subject with an apology, but I do feel that I might be pardoned tonight in making some sort of an apology to certain men. In an unguarded moment a few months ago when several Chicago dentists were trying to show a few Hoosier dentists a good time and what good fellows we were in Chicago, I foolishly consented (now don't take that as it seems) to be present here tonight. I say foolishly, not because I underestimate the honor of being a guest of this association, but because I had all the work planned that it was possible for me to do, so much work, in fact, that I absolutely did not have time to prepare a formal paper. And so, for the benefit of the two gentlemen who are to follow me in the discussion, I make this explanation. They have not seen my paper for the reason that I have none.

In this day of advancement rapid progress is being made in every line of human endeavor. Dentistry is no exception to the rule. In the past two

*A talk before the Indiana State Dental Society, June, 1909.

years operative and prosthetic dentistry have been revolutionized by the cast gold inlay; strides in orthodontia have been such that we are almost amazed at the accomplishments, and one who is interested in the subject of dental therapeutics naturally wonders whether or not this subject is keeping pace with the rapid progress being made in other branches.

When we see the flourishing condition of manufacturers of so-called nostrums, proprietary medicines, the *composition of which the manufacturers are not willing to give*, I say when we see these firms flourishing, and flourishing only because of the support given them by the profession, I sometimes wonder whether or not it is worth while for a few men to try to redeem this branch of our profession from empiricism and place it upon a rational basis. There is a tendency in medicine today to place the treatment of diseases upon a rational basis. Medical men who are alive and up to date are no longer satisfied to know that they simply get a result by using a certain remedy in a certain condition, but these men want to know why that result has been brought about. It seems that this ought not to be too much to expect of the trained dental practitioner of today. And so the question naturally arose in my mind, "Is it necessary for dentists to use proprietary medicines?"

Now, I know that dentists have used, and dentists are using today proprietary remedies, and I do not know whether we will decide here tonight whether it is necessary or not, but I have in my mind an answer to this question, which answer I will give later. That I might not be accused of proposing something without suggesting a remedy, (I mean a remedy not for this evil, but some remedies to use in your practice) I am going to call your attention to a few practical remedies that have served me well in the years I have been practicing.

On the line here you will see a number of formulae. The first remedy is for a devitalizing paste. I do not care what remedy a dentist uses, if he knows the constituent of the remedy, if there is nothing about it which savors of intentional deception of the part of the manufacturer, or which has something about it which is supposed to be secret, some one constituent of which is known only to the manufacturer and his creator—I say if the proprietary remedy is put up in an honest way, I have no objection to anyone using it.

DEVITALIZATION.

R̄ Arseni trioxidi, 5. j.; Cocainae, gr. xx; Thymolis, gr. v.; Lanolini, q. s., add to make paste; Sig. Use desired quantity.

Note.—Add lamp black to color.

Now, in a great many books you will find as a constituent of arsenic paste cocaine hydrochlorid, and still the vehicle of the prescription is an oil. Now you can use this prescription in the form of a paste, or you can take liquid vaselin instead of the lanolin, and fibrous cotton.

The next remedy is one which we have called Local Anodyne, or Modified Phenol:

MODIFIED PHENOL.

Mentholis, gr. xx; Thymolis, gr. xl; Phenolis (95%), q. s., add f. ʒ. j. M. Sig. Use for septic conditions of pulp and for uncomplicated sinuses.

This modified phenol remedy is what I call an anodyne remedy. Wherever you want an anodyne you can use it. I believe I want an anodyne in the root of a canal from which I have removed a live pulp. The thing that the patient wants is not an irritant as a root filling would be, but an anodyne remedy, and if you have not one with which you are satisfied you can use this one.

Another place where I use it is after I have devitalized a pulp. Instead of taking out the pulp at that sitting I would prefer to seal this anodyne remedy in the pulp chamber, because it is a remedy which contains thymol and because I want the action of thymol upon that dead pulp tissue. I would prefer to seal this remedy in for a week or ten days and then remove the pulp and fill the root.

Also after I have established a sinus in an uncomplicated alveolar abscess, to stimulate the sluggish tissue, when I think I want to use some stimulating remedy, this is the one I use. There are many other conditions in practice where it is valuable.

The next remedy is one I will not spend any time on:

FORMOCRESOL.

Cresolis; Liq. formaldehydi, aa f. ʒ. j.; M. Sig. Putrescent Pulps.

The next one contains phenol. I put that prescription there because it seems to be difficult to get cresol from a great many of the pharmacies, especially in Chicago where we think we can get everything. Now if you want to buy cresol you want to buy it from the wholesale manufacturer. I got a letter from a dentist in a western state and he said "Where can I get cresol? I have had sold to me for cresol everything from crude carbolic acid to everything that they use for putting on the hoofs of cattle." Now, because cresol seems to be so difficult to get, and I want you to get it colorless, just as colorless as water, I have given you this second prescription, which is good, nevertheless, to be used in cases of putrescent pulps:

Phenolis (95%); Liq. formaldehydi, aa f. ʒ. j.; M. Sig. Where indicated.

It is not nearly as efficient, however, as formocresol.

The other remedy is one to which if you have pure beech wood creosote it is necessary to add alcohol. It is a remedy to be used in putrescent pulps, but the cresol and formaldehydi is a better remedy, for reasons which I will not go into tonight.

8-a.

Pus from broken down tissue and fluids in apical area.

Chronic Dento—Alveolar Abscess.

A Dento—Alveolar Abscess without sinus.

Now I wish to call your attention to a condition where you have a dead pulp, and where the tissues are liable to break down. Use formocresol in

that canal. If you will open up that canal and expose the contents, and will seal in this remedy hermetically, the tooth will not ache. Now, if you have a so-called blind abscess, your treatment is just a little different. In the former you want to sterilize the root, because I feel in that case if I have an abscess develop it is my fault. In the latter case the abscess is already developed, in which case we mechanically evacuate the pus by going into the canal and forcing the pus out. Here it is better to remove all pus mechanically than it is to depend upon any agent to destroy that pus. Then loosely seal in the canal a small amount of formocresol.

You can modify the remedy in this way: Take two drops of the original and with a glass sealing rod add one or two drops more of cresol. Now I have one drop of formalin and one or two or three of cresol. My idea is this: I have mechanically removed these poisonous ptomaines, these active bacteria that are liable to cause trouble, and I do not need to use the amount of formaldehyd that I need to use in a canal that contains bacteria and toxic products that result from the putrescent pulp. In this case where the sinus is developed, if it is uncomplicated it is one of the easiest pathologic conditions we have to treat in dentistry.

If we have a root and bone complication, here we nearly always have trouble, because the tissue is so tough that the pus cannot work its way through between the bone and periosteum, and the chances are we will have necrosis or caries. If it is uncomplicated all we have to do is to cauterize the sinus with our Local Anodyne remedy. When it is complicated, when you have the sinus well established and have evacuated all the pus it is possible to do, instead of using this remedy I use phenolsulphonic acid:

PHENOLSULPHONIC ACID.

Phenolis (95%); Acidi sulphurici, (c. p.) a. a. f. 3. s. s.; Aquæ destillatæ, f. 3. j. M. Sig. Use as directed.

This remedy I would use in a complicated alveolar abscess, one where I had necrosis, or where I had caries of the bone, a root and bone complication. I use this occasionally in treating pyorrhea. I find whenever I use an acid in the treatment of pyorrhea I make those teeth unnecessarily sensitive and so I only use an acid where I have a stubborn pyorrhea pocket where I know that I have removed all the deposit from the root and yet the pus seems to persist. In that case I sometimes cauterize the entire pyorrhea pocket with an acid, and the acid I use is 50% phenolsulphonic.

Now some men when they get a pulp removed or when they have treated a putrescent pulp or an abscess, want to fill the root. There are three things you want to do in removing pulps from the roots of teeth. One is to maintain or establish asepsis, and the second, if you want to save the crown, is to preserve the color, and the third is to prevent recurring sepsis. In a live pulp all you have to do is to maintain asepsis. If you have a putrescent pulp you have to establish asepsis. In both cases if you want

a successful operation you want to preserve and restore the color of the tooth, and the third factor is to properly fill the root so that you will prevent recurring sepsis.

Some men like to fill roots with paste. I do not know what kind of paste they use. They use many celebrated abscess cures. Now, if you like to fill these canals with a paste, if you can't get away from it, and if you don't like the old gutta percha method, you can take precipitated calcium phosphate or zinc oxid (I like precipitated calcium phosphate) and add two per cent. of thymol. I like thymol because, while it has been experimented with, they don't know just how it acts, but they do know that it has a favorable action. You can take this thymol and calcium phosphate or zinc oxid as your powder and one of these three remedies as your liquid. I would prefer to take the formocresol, moisten the canal with the paste and then put your cone through that. There is a place where I do use a paste something similar to that. In a canal that I can not get into with a fairly good sized broach—in a canal that I can get into, and I can get into a good many, I fill these canals with gutta percha (gutta percha is good enough for me). But in that canal where I have made an honest effort to enter it and failed, then I do use a paste. I fill all large canals with gutta percha. But in the case of small canals instead of trying to do something I cannot do, moisten the canal with some solution of gutta percha and put into it a gutta percha cone, I would rather do something else. When I have all the large canals filled with the gutta percha, I make the above mentioned paste, putting that over the mouth of the small canals and with a smooth broach work it down as far as possible, taking away the excess of liquid with cotton, and put in my filling.

There is another place where I use a paste. I do not know whether you have had any trouble or not, but I have. We will take a case where a tooth has previously been treated with a large amalgam filling and it lasted a number of years, but the tooth is broken off now, and we feel that a crown is the only thing that is indicated. I have crowned many of these teeth, have gotten a history from the patient and every indication showed that the patient was correct, where I knew from my own records or from the history as related by the patient and from the conditions which I found there, that an attempt had been made to fill the root—I have crowned that tooth time and again, only to find in a week or two, probably two or three months, that the tooth had "woke up," so to speak, and was giving trouble. When a patient comes to me with that condition now, before grinding the tooth down for a crown, I make a paste of precipitated calcium phosphate and put it over the mouths of all the canals, covering with cement.

There is another place where I use this powder but not the same liquid. If I have a pulp in the lower molar, of a little child seven or eight years old, very nearly or quite exposed, where I dislike to extract the tooth and because I hate to hurt the child and still I hate worse to remove the

pulp at that time because I cannot fill them with any satisfaction, and I want to save that pulp for a few years, I take this same powder and then if I do not have an exposure I would use the modified phenol, but as long as I have thymol in my powder I would just as soon not use phenol, and I would prefer in all of these cases to use as my liquid oil of cloves. I make a nice paste, placing it over the floor of the cavity, being sure that it is not along the sides of the cavity, and then fill the tooth with something temporarily, and at the end of the year fill it more permanently.

I told you I filled most of my canals with gutta percha. I like to avoid saying what I fill root canals with because that seems to be a much mooted question and you cannot tell a man how to fill a root canal. I don't care what method you use if you get results. That is what counts, but I do not want you to use any remedy the constituents of which *you do not know*.

The thing I use is what I call Modified Eucapercha, made by dissolving the gutta percha by the aid of heat. I use white gutta percha to prevent the teeth from darkening. This eucapercha is made by dissolving base plate gutta percha in what I call my modified eucalyptol. I do not like any of these celebrated names, so I just call this modified eucalyptol. It contains practically the same thing in a way as the modified phenol:

(To be continued.)

INDIANS OF THE PLAINS IMMUNE FROM PYORRHEA ALVEOLARIS

By Dr. W. A. Allen, Billings, Montana

THIRTY-THREE years ago I became acquainted with a tribe of Indians known as the Mountain Crows, then located on Rosebud Creek in Montana.

These Indians are the most noted of all northwestern tribes for their intelligence. Their medicine men hold many secrets regarding the curative powers of certain herbs and minerals.

I shall confine my article to the subject of pyorrhea among this tribe of semi-savage people, living on the plains and mountains. Among the leading war and council chiefs, Pretty Eagle was the greatest that ever lived on the western plains (Fig. 1.). He stood six feet four inches in his moccasins and weighed one hundred and eighty pounds. He died of throat trouble in his ninetieth year.

After several exhibitions of rifle shooting and the killing of a remarkably large and savage grizzly bear, I became a favorite of his, and through him I was extended many privileges that few white men enjoyed.

It was through him that I met the medicine men and was admitted to the medicine lodge.

I had the pleasure of examining the teeth of forty warriors that night and many squaws. All showed the most beautiful teeth I have ever seen.

Before leaving the tribe I examined some three hundred and seventy-five men, women and children, without finding the least trace of recession



Fig 1.—Chief Pretty Eagle.

of gums and not a single abscess. Fig. 2 shows a model of the teeth of Pretty Eagle's daughter, then aged five years. I told Pretty Eagle I would like to get a cast of the teeth of the oldest warrior in the tribe to show the white men what fine teeth the Indians possess.

This cast I was able to obtain only after much arguing and giving him a pound of fine smoking tobacco.

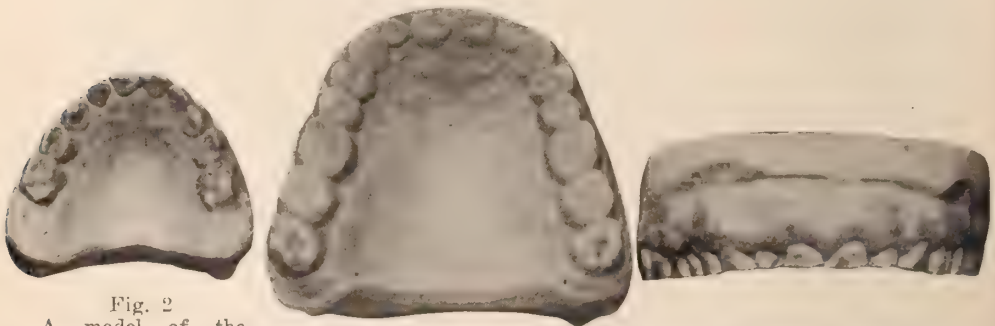


Fig. 2
A model of the
upper teeth of Chief
Pretty Eagle's daughter,
age 5 years.

Figs. 3 and 4 are models of the teeth of Pretty Eagle's father
who was 95 years old when impression was taken and in good
health at the time.

I took a cast of the upper jaw of a man ninety-five years of age (See Figs. 3 and 4.), six feet four inches in height, weighing about one hundred and ninety pounds.

I asked him what he had used to keep his teeth in such perfect condition. He opened a buckskin pouch and showed me some finely pulverized mineral and told me all the Crows used it, not only for the teeth, to which it gives a beautiful polish, but also for many other things, such as reducing inflammation and curing rheumatism. I tried to induce him to let me know what it was but he would tell me nothing about it, saying it was sacred medicine and had made many wonderful cures. The outdoor life, pure water to drink and a regular morning bath had much to do with the excellent condition of the North American Indian of the early days. I have visited twelve or fifteen burying grounds and examined several hundred skulls without seeing the slightest absorption of the alveolar process.

There are now changed conditions among the Indians, and a cause for the change which I will show in another article.

DIFFICULT EXTRACTIONS AND THEIR MANAGEMENT

By Alfred W. Hall, D. D. S., Chicago, Ill. .

THE average person requiring restoration of the dental organs will take considerable pains to find some responsible dentist in whom he can place confidence, but he who must submit to the tender mercies of the forceps will usually call upon the most conveniently located practitioner, giving slight thought to his professional standing or ability. The laity, almost without exception, look upon extracting as simple and unscientific, while in reality the proper management of a difficult extraction requires more skill than many seemingly more difficult surgical operations. Appendectomy is a simple operation compared with the removal of impacted lower third molars.

The dental colleges are responsible for this erroneous attitude of the public. The subject of extracting has been so grossly neglected in some of our colleges that the average dental graduate is qualified to perform only the most simple extractions, and his practical knowledge of anesthesia is so meagre that his first administrations must of necessity be of an experimental nature; his knowledge along these lines must be obtained by bitter experience.

If our colleges would establish chairs of extracting and require their students to attain as much skill as extractors and anesthetists as they do in other branches of dental science, our young dentists would go out into the world with a proper appreciation of the complications which go hand in hand with extracting, and in turn would educate their patients who, upon being enlightened, would be willing to pay proper fees for this work. There is actually no more reason for doing free extracting when an upper plate is being furnished than there is for presenting a lower plate gratis, and we cannot blame the public for its derisive attitude towards extracting, if the dentist will make such concessions.

It is my aim to carefully cover the subject of extracting in an article

which will be published in two installments, and as most difficult extractions call for an anesthetic, my first installment will be devoted to anesthesia.

First, we must consider the relative values of general and local anesthesia, and second, the nature and physiological effect of the different anesthetics.

The basic principle of nearly all local anesthetics is cocain, and the first rule to be observed is to avoid the use of nostrums which are placed upon the market as so-called "Absolutely Safe Local Anesthetics." These concoctions may contain enough cocain to make their administration unsafe, or not enough to produce the desired effect. We should never use cocain or any solution containing it unless we know the exact quantity of the drug and the concentration of the solution employed.

My practice has been never to administer more than one-half grain of cocain, and if possible to get along with much less, and to use a solution no stronger than 1%. If this is properly injected into the gum tissue around the teeth to be extracted, satisfactory results can be obtained. I have met with success with the use of Parke, Davis & Company's Local Anesthetic Tablets No. 81. Each tablet contains cocain hydro-chlorate one-half grain, morphin sulphate one-eighth grain, and atropin sulphate 1-200 grain.

In most every case of extracting calling for an anesthetic a general anesthetic is to be preferred to a local. The reasons for this are, that when a general anesthetic is properly administered we can promise our patient absolute immunity from pain; we can operate to better advantage, as the patient is quiet, and when a number of teeth are to be extracted it insures a greater degree of safety.

Of the different general anesthetics to be used for extracting, chloroform and ether should be eliminated, especially when administrations are to be made in the dental office, owing to their lethal properties and because they require altogether too much time for administration and recovery.

Of the general anesthetics available, nitrous oxid is the safest and best adapted to our specialty.

NITROUS OXID ANESTHESIA

In taking up the subject of Nitrous Oxid Anesthesia, it is my purpose to cover the ground in a practical way, and not to take up your time discussing theories regarding phenomena of which our knowledge is uncertain.

First of all, to be a proficient anesthetist one must have had experience. The ability to instantly recognize symptoms, and to sense the danger signals before they become pronouncedly manifested, is attained only by experience. By carefully watching the respiration, and regulating the supply and concentration of the anesthetic, one experienced in the use of nitrous oxid anesthesia can carry his patient along with a sense of security attainable with no other general anesthetic.

The elementary constituents of nitrous oxid (N_2O) are bound together in chemical union, and the gas does not give up its oxygen in the lungs,

consequently nitrous oxid can be inhaled by itself only long enough for the blood to absorb sufficient of the anesthetic to produce a few seconds of anesthesia. This condition can be overcome, however, by mixing a small quantity of air with the gas, the exact amount necessary being only determined by the symptoms which become manifest as the anesthesia progresses.

It is desirable to have the patient wait at least two hours after eating before taking nitrous oxid, but ideal conditions are not always attainable, and many times it is necessary to administer the anesthetic on a full stomach, when nature is apt to revolt and expel the undigested meal.

In preparing the patient for nitrous oxid, first see that the clothing is loose enough to enable deep and comfortable breathing, sit the patient in an upright position in the dental chair, being careful not to tip the head backwards, as such a position would enable a tooth or root to fall into the air passage, should it drop from the forceps; it would also allow a flow of blood into the trachea, where it might clot and produce fatal results.



Fig. 1.



Fig. 2.

Place a large rubber apron over the patient's clothing to protect it from bloodstains, and after placing the rubber mouth-prop in position, adjust the nasal inhaler upon the patient's forehead, where it is held by an elastic band passing around the head, as shown in Fig. 1. Now proceed to administer the anesthetic by means of the facial inhaler, as is also shown in Fig. 1. The gas is delivered to the patient through this inhaler under atmospheric pressure, and the administration should be continued in this manner until profound anesthesia is obtained, whereupon the facial inhaler is dropped to one side, and the nasal inhaler drawn down so that the administration may be continued through the nose, as is shown in Fig. 2. The gas is delivered through this inhaler with sufficient pressure to force it back into the posterior nares, thus compelling the inhalation of the anesthetic even though the patient's inclination be to inhale through the mouth, which necessarily must be propped open. In this manner, if the supply of gas be carefully regulated, its delivery being entirely cut off, in some cases, at intervals, the anesthetic may be continued for several minutes.

When nitrous oxid is inhaled for a few seconds, so that the gas is gaining tension in the blood, slight duskiness of the skin appears, the lips and finger tips darken, the pupils will usually dilate, the eyes becoming dull and expressionless, and unless some air has been administered with the anesthetic, laryngial stertor will appear, making it necessary to discontinue the administration before enough of the gas has been absorbed by the blood to produce more than a few moments of workable anesthesia.

COMPLICATIONS

Some persons retch as soon as a mouth prop is placed in position, in which case use an extremely small prop and open the mouth with the gag after the patient is asleep.

Valvular heart disease is not contra-indicative unless marked want of compensation is present.

Pregnant women, providing they are not very near the time of accouchement, are not prejudiciously affected by this anesthetic. The shock of an extraction, or the long drawn out agony of an aching tooth, is quite as likely to produce premature delivery as the administration of nitrous oxid. The child is also unaffected, which is due to its low oxygen tension and to the rapid elimination of nitrous oxid from the blood.

The anesthetist should be careful not to begin the operation before the patient is fully anesthetized, for if pain is experienced at the start a state of excitement will ensue, entirely upsetting the equilibrium of the patient's nervous system, making it impossible to quiet him even by administering an excessive amount of the anesthetic.

Oxygen, being a natural antidote for nitrous oxid, should always be at hand for use in case of emergency. In case the heart should become embarrassed, an amyl nitrite pearl should be broken on a towel and held to the nostrils. This, however, will seldom be necessary if the respiration is carefully watched. To patients with feeble heart action it is advisable to give 1-50 grain strychnin sulphate with 1-150 grain of atropin sulphate a few minutes before administering the anesthetic.

The next installment of this article will take up the subject of instrumentation with special relation to the use of elevators, mouth props and gags.

(To be continued.)

IT is only a shallow disposition that expects or even hopes for perpetual happiness. Shadows in all great pictures are necessary to bring out the theme, otherwise we have a botch of color—and no soul.

THE SPHERE OF THE TAGGART INLAY *

By L. E. Custer, A. M., D. D. S., Dayton, Ohio.

TWO years have now elapsed since the advent of the Taggart inlay. The time, although not long, has been sufficient to reveal the merits and demerits of this system of filling teeth. We are not, therefore, so much concerned as to cavity preparation for this class of filling, but in a broader sense we are to consider where such fillings are indicated. These indications are based upon what have by this time been shown to be ever-present facts.

The great value of the cemented filling over all other forms of filling, especially in large cavities, has been proven by the history of a quarter of a century. This is sufficient experience upon which to base the claims as set forth in this paper. The brittle nature of porcelain, while it has caused the failure of many such fillings, all the more clearly proves the value of this method of inserting fillings and convinces us that a little more perfect fit of a material possessing greater edge strength is all that could be asked of a method of filling large cavities and the inlay fully meets these requirements.

MERITS OF THE CEMENTED FILLING.

The merits of the cemented filling may be summed up under four heads: It hermetically seals the cavity, it reduces the strain upon the tooth, it preserves the color and it reduces the thermal changes. Wherever cement covers tooth substance, caries does not occur and even in those cases where carious dentine has been intentionally left in the cavity for pulp protection, decay does not progress when sealed over with cement. We have in cement the most effectual preventive of decay of all the filling materials. No matter how thin it may be, so long as it covers tooth structure caries cannot occur under it. All inlays when considered as preventives of decay are to be regarded as cement fillings into whose bulk an approximately fitting stopper has been pressed, and the closer the fit of this stopper to the margins of the cavity the longer will be the life of such a filling.

The second advantage of the inlay over a malleted filling rests upon the fact that it is cemented into the cavity. The layer of cement serves to bind the filling to the tooth and the tooth to the filling, making all one. Any dislodging strain is not, therefore, felt upon a particular wall, but all the walls receive the impact together. It is for this reason that we are permitted to leave enamel edges much thinner than where the filling is malleted. We must not, however, understand that the enamel walls can be relied upon to retain the filling. The retentive foundation must be laid in the unyielding dentine except in those places where the cleavage of the enamel is parallel with the walls of the cavity. Now, if the statement is correct that in the cemented filling we have one that is rather a support to tooth substance than it is

*Read before the Northern Ohio Dental Association, June, 1909.

a strain thereon, not considering it too literally, but rather from a practical point of view, we must, therefore, acknowledge that we have in this one of the most valuable bases upon which to practice the art of saving badly decayed teeth. The sphere of the cemented filling when used in extreme cases is one to take the place of the gold or porcelain crown. It holds back the ravages of dental caries one full step before we come to the crown operation.

PRESERVES THE COLOR OF THE TOOTH.

The third point in favor of the cemented filling is the preservation of the color of the tooth. The layer of cement not only prevents the show of gold through thin enamel walls, but effectually preserves the color of the overlying enamel. The malleted filling at first gives a yellow cast to thin enamel walls and this in time becomes darker in color. Thin enamel being quite translucent the new bright gold is seen through the thin edges. In nearly all such cases there is a darkening in time due to a change in the color of the gold and a stain which thin, leaky walls seem to take on. These changes and discolorations do not occur under a cemented filling that is fairly well-fitted to the cavity margin. Porcelain inlays have been justly criticised at times for the dark line appearing at the joint. This is the one fault, especially with large porcelain fillings where the shrinkage of such a large mass of porcelain was not preventable. Chipping of the edges from usage has often been observed even when the edges were originally perfectly fitted. Herein lies a great advantage of the gold over the porcelain inlay. The margins can in most cases be burnished into actual contact with the enamel and subsequent use serves, by reason of the malleable nature of gold, to even increase the tightness of the joint, especially where the force of mastication comes directly upon the margin. This you see is just the opposite of what takes place at the margins of porcelain fillings, and it is for this reason that we do not see the dark line about gold inlays, but which nearly always makes its appearance about the margins of poorly fitted porcelain fillings and even about margins of perfectly fitting porcelain fillings that are subjected to the force of mastication.

REDUCES SHOCK FROM THERMAL CHANGES.

The fourth advantage claimed for the cemented filling is that the intervening layer of cement reduces shock from thermal changes. It does not matter how thin this layer of cement may be it has a pronounced effect. Do we not know that the conduction of heat or cold is often reduced as much by passing through unlike substances as it is by the thickness of the substances themselves? The heat of the sun is conveyed to us by a mode of motion of the ether. Heat is also a form of motion in matter, which Davy has shown to be vibratory. It is transmitted through substances by conduction. In this phenomenon the molecules are set into vibrations according to the degree of heat. Every substance possesses a difference in the rapidity with which its molecules can assume this molecular agitation so that when heat

is conducted through unlike substance much energy is lost in getting the vibrations of these unlike substances into rhythm. Now, it is for the above reason that even a very thin layer of cement serves to a large extent to check the transmission of thermal changes to the pulp.

ADVANTAGES AND DISADVANTAGES OF THE TAGGART INLAY

Having pointed out four distinct advantages of the *cemented* filling we will now consider the especial advantages and disadvantages of the Taggart inlay. The first merit of this filling is the simple form of cavity preparation that is necessary. Where a cast inlay is properly indicated most of the preparation can be made with the chisel—a rapid and almost painless operation. In my own practice there is a growing feeling between patients and myself that the terrors of dental operations are fast passing away, and this is largely due to the use of the inlay. Appointments have been shortened and what have heretofore been painful operations are now scarcely noticed. In large cavities it is seldom that more than half an hour is necessary for the preparation and taking of the wax model and about the same length of time for the setting and the finishing. Compare this for a moment with two or three hours under the rubber and under excruciating excavating and malleting. It may be broadly stated that where an inlay is properly indicated, the decay having been removed, the actual preparation of the cavity for filling retention is almost entirely in the enamel of the tooth—a painless operation.

No operation in dentistry comes to us with such ease, considering its great importance, as the cast gold filling. We, as dentists, have learned to do some wonderful things when compared with the other arts and sciences. I do not say this boastfully, but as a fact for which we have never even given ourselves credit. The porcelain inlay, when rightly considered and when first made, beginning with the unsightly cavity, and going all through the cavity preparation, fitting of the matrix, harmonizing of colors, baking and finally setting and polishing is a work of art unequalled in any other branch of human endeavor and this, too, performed upon a live subject. Yet, we, by our education and training, are making this operation daily in the most perfunctory manner and with the greatest facility. It is no wonder then that the cast gold filling comes to us so handily and that we are able, in scarcely two years' time, to make cast fillings, the fit of which in many cases defies even the microscope.

While the making of the inlay as a whole, is comparatively easy, it still is not an operation to be slighted. While the careless dentist can make a good filling by this process, yet the most perfect results are only to be attained by following out every step to the minutest detail. The proper forming of the cavity, the careful shaping of the wax filling and its removal unharmed, the investment and proper casting of the gold under uniform conditions of heat, pressure and bulk of gold are always to be observed. We are inclined to look upon the inlay filling as the easiest thing in dentistry, but

this is not so. If we stop to consider for one moment we will realize that we have taken that view because the results are always so good and so easily obtained as compared to the obtaining of equally good results by the old and laborious methods. It is by comparison with the rubber dam and malleting of fillings, the worn out patient and the lame back of the dentist that we have come to regard the Taggart filling as an easy operation. When we rightly value this filling, not only as to the function it fills, but the great saving of pain, labor and time, we must acknowledge it to be the most worthy achievement in dentistry in years.

The accuracy of reproduction in gold of so small an object, not only as to size and shape, but even to microscopic details is an achievement of which the dental profession can well be proud. It is an easy matter to cast large objects where a head of metal is to be had, but when we have to deal with a very small object, to employ a metal with a high melting point and an investment having strength, high heat resistance and detail, the difficulties increase, and it is satisfying to say that we have met them. Data are now being furnished from which we have at our own command the means of casting gold fillings the exact size of the model or we may cast them even larger or smaller than the model, so that before long we shall have cast fillings of any size and shape which are perfect reproductions of the model in every detail. The shrinkage of very large fillings can by these data be fully compensated for and the largest filling in which shrinkage of the casting invariably follows to some extent is entirely offset by modifying the investment and pressure of casting. We cannot control the laws of contraction in metals while passing through the difference of heat between their melting point and normal temperature, but we can by the use of certain investment materials, properly heated before casting, and the pressure of the metal while being cast compensates for the inherent shrinkage of the metal under changes of temperature.

The malleability of pure gold is a great aid at the time of setting. It makes no difference how perfectly a casting may fit, there must be some space between the filling and tooth or the filling cannot be driven to place at all. When it is finally seated the malleability of the gold allows the margins to be burnished or in fact riveted into actual contact with the tooth. If an old carborundum stone well filled with gold be revolved from the center toward the margin of the filling it will push along ahead of it a wave of gold which will make a perfect fit at the margin. The cohesive property of pure gold explains this phenomenon. There will be no abrasion or loss of gold at all. Sometimes the dentist may not have obtained a perfect casting, either as a result of shrinkage or the edges not being sharp. These fillings may yet be made good by following the above suggestion, provided the margins are accessible.

Another advantage of the gold over the porcelain filling is the edge strength. As previously pointed out the chipping of the margins of porcelain fillings is to a large extent the cause of their failure. With porcelain

fillings, where subjected to mastication, there sooner or later comes a chipping of the margins and a widening of the distance between filling and tooth. With the gold inlay the results are quite the opposite. The edge strength of gold, and at the same time its malleability, tend to keep the filling tightly fitting against the enamel wall, and as a rule the harder the usage the tighter the fit.

DISADVANTAGES OF GOLD OVER PORCELAIN.

There are two disadvantages of gold over porcelain, color and conductivity. My own experience with porcelain after a continuous use of this material since its very first introduction, has led me to the belief that there is not so much in the harmony of color claim as was first "cracked up" to be, if I may use a term which so well conveys my meaning. We were first met with the cement problem and its modifying effect upon the color of the finished filling, but at this day I am more annoyed with the gradual bleaching out of the color of porcelain fillings in time than anything else. Fillings which I know were most satisfactory in color at the time of setting are all today very much lighter in shade than when originally set. This is especially true of those made of low fusing porcelains. The only porcelain fillings which have retained their color to this day are the little circular How inlays, which were made of the White discs, and those cut from the Ash rods, made for that purpose. I have been using these ever since put upon the market in 1888, and those made in that year and the years immediately following still possess their original color. It may be charged that I over-baked or under-baked the porcelain at times, but why this uniform bleaching out in all matrix-baked porcelain? I have, therefore, come to the conclusion that, since in addition to other inherent faults in the porcelain, that of which we were at first so proud and which was the charming quality of porcelain is failing more year by year; that as a filling harmonious to tooth color, the longer it lasts the worse it looks. This view is not taken because the subject of this paper is the gold inlay, but because the above statements are facts only too true. Since the advent of the gold inlay I am not any longer using porcelain on conspicuous corners. All porcelain fillings must be of some bulk and not come to any masticating surface except in rare instances of faulty articulation, where severe strain cannot at any time reach the filling.

Porcelain, therefore, except where used as just indicated, has but one virtue over the gold inlay, which is its non-conductivity. This is a virtue not to be overlooked, for what annoys our patients more and kills more pulps than the effects of thermal changes? It is not meant that porcelain is a perfect non-conductor, but it is so much so that our patients never complain of thermal changes under porcelain fillings.

THE TRUE SPHERE OF THE GOLD INLAY.

In view of the foregoing, I shall now outline what I believe to be the true sphere of the Taggart inlay. In the incisor teeth it is indicated on all

corners and restorations of large size which are subjected to the force of mastication. The color of the gold can be improved by the addition of ten per cent. platinum, but it should be borne in mind that the physical property of the gold is entirely changed. Such a filling is hard and unmalleable. It is remarkable, however, how much even a small percentage of platinum raises the color of the gold. We would naturally suppose that equal parts of platinum and gold would produce an alloy the color of which would be half way between gold and platinum. This is not the case, however, only ten per cent. platinum will be sufficient to give a distinct platinum shade. Porcelain is indicated in the anterior teeth only in those places which are conspicuous and beyond the force of mastication. In the bicuspid the same rule should prevail as in the use of porcelain, but here the field opens for more extended use of the cast inlay. Many teeth which contained live pulps were covered with gold crowns. These should now be filled with cast gold instead. As a matter of fact, I find in my own practice that I have very little use any more for a bicuspid gold crown. If the tooth is too far gone to be successfully filled with a cast filling it is usually so bad that a porcelain crown is indicated. In the molars the usefulness of the cast filling still further broadens. All cavities of large size should be filled in this manner. It is my belief that even those extreme cases in which only the buccal and lingual walls are still standing are better filled with a cast filling than crowned. I have many such in service today and my faith in this particular operation is strengthening. In filling these cavities the precaution should always be observed to dress the tops of these upstanding walls off a little and carry the gold over them. Otherwise these walls are liable to be sprung from the gold and break up the cemental attachment.

Some five years ago I read a paper before this society on the "Utility of Porcelain in Large Cavities," advocating it especially in those large cavities in the third molars, which extend under the gum and which are beyond filling with amalgam or crowning. I have been practising that method most satisfactorily till this time. No operation has been quite equal to a cemented filling in these cases. The margins of nearly all of these fillings, because of their not being subjected to severe use, are all as good as when the fillings were first made. Since I have been using cast gold instead of porcelain the operation has been shortened and the fit improved, and I know the ultimate results will be even better than when porcelain was used.

It must not be understood that the Taggart filling is to eventually supersede all other methods of filling teeth. Nothing would be farther from the truth than that. We will, for a long time to come, be using malleted gold fillings in small cavities, and unless the silicate cements prove more trustworthy as to durability and maintenance of their original color, we will also be using porcelain much as we are today. The virtues of the inlay are its saving of pain to the patient and backache to the operator; its simplicity of technic and its accuracy of fit; but the grandest of all rests in the fact that it holds back the hideous gold crown at least one full step.

DISCUSSION.

DR. J. R. BELL, Cleveland: It would have been more gratifying to me, and I feel safe in predicting, more profitable, if Dr. Custer had given us a paper on the technic of making gold inlays and confined his ideas to this, for it is without doubt the most popular and practical subject before us today. His paper has most concisely proven, not only the sphere of the inlay, but also the reasons for preferring it to other methods of filling in many cases.

The paper is rich with valuable ideas as we might naturally expect, but this is a new process and as far as my experience goes, and as Dr. Custer also admits, it is in the experimental stage.

We must admit that the operation of preparing a cavity and making a gold form or "stopper," as our worthy essayist calls it, which will hermetically seal that cavity, is from beginning to end the finest mechanical art imaginable.

I agree with the essayist that the very simple and favorable cases are handled with comparatively little time and pain, but the deep-seated complicated ones, in which cement or other smooth linings must be placed before an accurate model is secured, is another interesting feature; and one which it might be well to consider.

If there is a way by which the ideal cavity, so-called, can be formed, and the wax model secured all within half an hour and the inlay polished and set in about the same time, I want to learn it. Either I am very slow or my minutes are shorter than Dr. Custer's.

It has been my practice in most cases where it is possible to adjust the rubber, to remove final layer of decay, treat the tooth antiseptically build up and reinforce frail walls with cement, then proceed to plane axial and cervical borders with suitable chisels, polish the axial borders with fine disks, and in many cases, the occlusal borders and cusps; occlusal surfaces can be made smooth most effectually with fine stones of suitable size. From accustomed practice I feel sure I am laying myself open to criticism, the severest of which will be that I defeat the object of the process by consuming unnecessary time.

In rebuttal of this criticism I will say that it is not my custom or practice to see how much I can do in a limited space of time, but how nearly perfect I can make each operation. Here I might add that I believe in compensation "proportionate."

Dr. Custer has given us an accurate mind-picture in his third point in favor of *first*, the yellow cast, and later on the darkening due to a change in the color of the gold **through thin enamel walls, of malleted fillings.**

This defect has been overcome for a number of years by re-inforcing these transparent walls with sticky cement of suitable shade, and inlaying or impacting the cohesive gold.

This system has been an almost daily custom with me and I have found the Williams Cohesive Pellets well adapted. A clinic demonstrating the retention of gold fillings in very shallow cavities with sticky cement is among our treats for tomorrow.

Now a word with reference to Dr. Custer's statement regarding thin layers of cement being impervious to moisture. If this is literally correct, I have been wasting more time, for in cases where thin layers of cement have been placed in the cavity to fill undercut, etc., I have removed it, applied antiseptics, and dessicated the cavity before setting the inlay. My logical reason for doing this is that I had not condensed the thin layer of cement sufficiently to prevent the penetration of saliva which I believe is universally used as a lubricant for the wax impression. Is this procedure necessary?

It has been my practice to keep the cavity absolutely dry before inserting the inlay, the same as I would for a gold filling. I have the same aversion for saliva bacteria in the tooth cavity that I have in root canals. Are my reasons well founded? One of the principal advantages gained in preparing the borders of the cavity while dry is that we are able to detect decalcified enamel structure along cavity margins, in the dry tooth, which are quite obscure while the tooth is moist. I grant that in deep-seated buccal

cavities, where the adjustment of the rubber is impracticable, we must resort to the next best method. It is in this class of cavities and the deep-seated buccal occlusal and distal occlusal cavities in third molars that the sphere of the Taggart Inlay is great.

There is no doubt about the prevention of stress and shock in inlays as against gold fillings; and as a preventive against thermal changes the advantages of the inlay over "an all gold filling" will not bear comparison.

And with Roache's Suction Wax carver we truly have a simple device worth its weight in gold, for one of the seven reasons for making hollow inlays is the minimum thermal effect on the pulp. Simplicity certainly warrants its use.

More essential preparations are necessary to insure universal success in inlay operations. The first is a wax which will retain its form *absolutely* as it is withdrawn from the cavity. One with sufficient *toughness* to retain a slight feather overlap, or excess, over the entire cavity border. I deem this feather edge in the gold inlay as of *vital importance*. It has two distinct advantages.

1st. It insures a finish that defies the microscope, as Dr. Custer puts it. And with that malleable feature in the inlay which Dr. Custer so well describes, any shrinkage, which has occurred in my cases, is completely overcome by filing and polishing the inlay from the center outward. This drives and teases the gold crystals outward, slightly enlarging the piece or "stopper" *a la Custer*.

A principle which we have always known in metals is the tempering or hardening of all metals by vibration, "bending." So, therefore, this delicate feather edge, to which I referred above, must not be bent back and forth, hardening the gold along its marginal edges just where we want it the softest, where with disk and burnisher quite a discrepancy is beautifully filled.

You will recall this feather edge to which I attach so much importance being bent in upon the inlay after finishing and polishing. It requires now the most dainty handling with a very thin bone, or wood spatula by which the overlap should be bent back to place.

This slight excess, if trimmed off before setting the inlay, reveals little waves in the enamel upon the uncut surface. These waves may be the result of mechanical or chemical abrasion; any way they are nicely matched with the little film if it can be gotten in wax, and then in gold.

Often a fine finished strip may be used to advantage over the cervical overlap after setting the inlay. Another characteristic which is lacking in all the makes of wax which I have tried, is the residue which precipitates, chars, and roughens the mould of investment.

A small oven with a heat regulating device by which only sufficient heat is admitted for displacing the wax model *without* leaving a residue, would be of great value.

I hope some genius will take the hint. All of the above suggestions in regard to wax and heat must be applied to investment with equal emphasis.

THE only good in the world is that which is according to your own conscience, and the only bad is that which is against it. And it is only a moral degenerate who requires some one else to decide the matter for him.

AN AID IN PROPHYLAXIS

By Goodman A. Miller, D. D. S., Chicago, Ill.

I have read with a great deal of interest the contributed articles in your valuable and artistic journal, *THE DENTAL SUMMARY*, on the treatment for pyorrhea and maintaining prophylaxis. I have been engaged in this work for the past year and have found a help which I think will be appreciated by those working along similar lines. I hope you will find it of sufficient worth to give it space in the *SUMMARY*. In my prophylactic work I have found the chemically pure oxid of tin, slightly moistened with Sanitol liquid, oil of wintergreen, or something of that nature, to slightly impart a flavor (which I find is appreciated by the patient), is most excellent for use with your hand port polisher, or may be used on moosehide polishers in engine, to impart a final polish to your teeth. In the port polisher I use a good grade of shoe-peg. If your foundation work has been carefully and thoroughly done you will be rewarded with a brilliant polish which, if faithfully maintained, will bring its own reward and will cure the abnormal condition.

CARIES OF THE ALVEOLAR PROCESS—SOME PARTICULAR CAUSES AND ITS TREATMENT *

By Herman C. Kenyon, D. D. S., Cleveland, Ohio

IN the consideration of this disease, the structure of the alveolar processes of the maxillary and mandibular bones is of importance. In a general way, these bones consist of a buccal or labial and a lingual plate of hard, dense bone, held in varying relation to each other by a filling between of cancellous or spongy bone, into which loosely constructed mass the apices of the teeth extend. Each alveolus is lined with a membrane which is periosteum to the bone and pericementum to the tooth root contained in the alveolus. The tooth root does not completely fill the alveolus in the apical region, but leaves some space to be filled by a thickening of the pericementum, which forms a cushion occupying this apical space. It should be noted that the structure of the alveolar process is such as to facilitate the spread of an infection and the absorption of gases, produced either from decomposition processes or from chemical action of drugs used in treatments.

The pathological condition which we have under consideration—caries of the alveolar process—is the molecular destruction and dissolution of the bony structure about the roots of the teeth.

It is sometimes erroneously referred to as necrosis of the bone. The term necrosis of bone as used in pathology refers to the death of bone en masse, and is accompanied by the formation of a sequestrum.

There are two classes of cases of caries of the process. In the one class the irritation or infection attacks the bone at the border of the alveolus and

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progresses towards the apex of the root. This condition is known as, or at least accompanies, pyorrhea alveolaris. It is not our intention to discuss this class of caries in this paper. In the other class of cases which we wish to make the subject of our consideration for the time, the process is attacked at the apical space and is preceded by the dissolution of the soft tissue contained in this space. Probably in every case infection has entered through the pulp-canal of the root involved.

The usual order of progress to this disease is infection of a devitalized pulp, extending through the foramen and destroying the peridental membrane in the vicinity of the apex, producing an acute abscess which may run the usual course and form a sinus. Drainage being established, destruction of tissue at the center of infection progresses with more or less rapidity, either continuously or intermittently for an indefinite period, and *usually with no pain*, resulting in caries of an extensive area of the process. Frequently the progress of infection and destruction is so slow that the products of the decomposition are absorbed and disposed of otherwise than by drainage through a sinus into the oral cavity. Again a sinus may be formed which drains into some other cavity in its vicinity such as the maxillary sinus, the naris, or, if a lower tooth, opening outside underneath the lower border of the mandible, and in rare cases following the fascia down the neck and discharging into the chest cavity. Cases of caries of the process with a vent or drainage through a sinus into some portion of the mouth are probably more numerous than any other class, and fortunately, result in less disastrous consequences. Cases with no sinus from which the gases and other poisonous refuse are absorbed are probably next in frequency, and I believe are much more frequent than the average dentist suspects. On account of their insidious development these abscesses are difficult to discover and are often overlooked. Their consequences are often very serious and the more so that they are usually wholly extra-dental, both as to location and character, including mental and nervous disorders, such as neuralgia, insomnia, melancholia, etc.

The contents of these carious pockets are variable. Foul gases are always present. A sac containing a straw colored serum may mostly fill the space. Ordinary pus of decomposition may constitute the contents. The space rarely may seem to be entirely empty and dry. The bony structure may not be entirely broken down so the pocket is more of a cellular or honey-comb formation, partly or wholly filled with the partially dried debris of decomposing bone structure. If the pocket be one without drainage or vent through a sinus the odor upon opening will be beyond description. After a patient has experienced the horrible rottenness of that odor for but an instant, it is not in the least difficult to convince him that a mistreated or neglected pulp-canal might possibly have some disturbing effect upon the equilibrium of his nervous system. It is a mystery alike to both patient and operator how such a condition can exist without producing an intolerable

condition of inflammation and pain in its immediate vicinity. Yet, such is frequently the case, and it is sometimes very difficult to convince the patient that an operation is necessary.

I beg to emphasize the fact that many more of these cases exist than we are in the habit of thinking. Occasionally the patient applies to us with a knowledge that something is wrong about the root of some tooth, but very many of such cases exist with no local symptoms that betray their presence to their unfortunate possessors.

What is the cause of these attacks of caries upon the alveolar process? Infection, to be sure. That is apparent to all, but so is infection from the same source the cause for a number of other less serious ailments which are usually readily cured. Caries of the process seems to follow conditions that produce an irritation which is persistent, but may not be severe enough to produce pain. Bearing in mind that these irritations and slow infections probably without exception come from neglected or mistreated pulp-canals, I wish to cite a few conditions which may produce them.

In this connection I would mention direct infection due to negligence of the operator in his root filling operation; the injury of the apical tissues by the passing of broaches and drills through the foramen in efforts to remove pulp tissue; the intemperate application of caustic and irritating drugs beyond the apical termination of the canal; the use of gutta-percha or any other compressible stopping as a sealing for cavities over infected or medicated pulp-canals; the incomplete cleansing and filling of the small pulp-canals; the careless use of pressure anesthesia and of arsenic prior to the removal of pulps; the filling of the apices of roots with irritating substances such as cement, or gutta-percha points with a metal reinforcement, or any medicated material that contains an irritant, such as oxpara for instance. In my opinion, based upon a careful inquiry into the history of many cases which have come under my observation in my practice and cases referred to me by others, by far the most prolific cause of caries of the process is the slovenly and indolent habit of too many dentists of placing fillings in cavities in the crowns of teeth over diseased pulp-canals which they have made no attempt to treat or fill other than to introduce some kind of root-canal dope, of whose constituents they are blissfully ignorant, but which has been concocted of such ingredients that it will act as an anodyne and antiseptic for the present, which usually contains formaldehyde in some proportion—a drug that has no equal in some respects for the temporary treatment and preparation of infected canals for filling, but a drug which has no place in a permanent root canal filling material.

There are no printable words of condemnation severe enough for dentists who perpetrate such crimes against those who have intrusted themselves in their hands for professional care.

The diagnosis of caries of the process is sometimes but not usually difficult. There is usually some complaint on the part of the patient which gives a clue to the trouble. It may be just a general uneasiness in the

region of the trouble, some form of neuralgia, or obscure nervous disorder, or the patient may be able to point out definitely the offending tooth. The soft tissues over the carious area will often show the usual symptoms of underlying irritation and be tender to pressure. Again the tooth itself may often give no response whatever to pressure or percussion.

In cases having a sinus opening into the mouth, the use of an exploring probe will often determine the condition about the apex of the root. The one greatest and most important means of definite diagnosis, however, is the skiagraph film. This is not always necessary to determine the presence of caries, but it often is, and it is always of great value in determining the extent of the operation, and in guiding the operator during the operation for the removal of the diseased tissue.

In the opinion of the writer, the cure of this disease with practically no exceptions, calls for surgical intervention, and upon the skill displayed and the thoroughness in performing the operation will depend very largely the final result. The operation consists in removing the original cause resident within the pulp-canals, and the removal of all diseased bone and soft tissue in the vicinity of the apex, together with the excision of any portion of apical third of the root that may have been denuded of pericementum or affected by the solvent action of the fluids contained within the carious pocket.

It is not my purpose to go into a lengthy discussion of the treatment and filling of root canals. Suffice it to say that the first step and an absolutely necessary procedure in the cure of caries of the process is the cleansing, sterilizing and filling of the pulp-canal to its apex, or at least to a point at which the root of the tooth shall subsequently be excised. In rare cases it may be advisable to operate upon the process first, and fill the canal later. The filling material must be aseptic, non-irritating, insoluble, and permanent in character. In my opinion, gutta-percha is the best material we at present possess for the purpose in these cases. The filling must be well packed down to the end of the root with sufficient force to thoroughly condense it. No harm is done if some of it is forced through the foramen.

Right here, I want to mention the opinion that there are undoubtedly a large number of pulp-canals impossible of perfect filling. The number is a tremendous sight smaller though than a lot of dentists are anxious to believe.

The next step is the removal of the carious portion of the alveolar process. Usually this demands some form of anesthesia local or general. This is a matter for the operator to decide, but the patient's wishes may usually be consulted. The condition of the tissues to be operated upon and the susceptibility of the patient to shock are usually the determining factors. Personally, I prefer to operate in most cases with a local anesthetic, otherwise nitrous oxid with oxygen through a nasal inhaler is my choice. Frequently there is very little real pain produced after the soft tissue has been dissected through, and this may readily be controlled with an injection of

a dilute cocain solution. If the general anesthetic is to be used some other person than the operator should attend to it in most cases. However, if the operator be expert in each, it is quite possible and safe for him to attend to both the anesthetic and the operation. Preceding this part of the operation the entire oral cavity should be put into the most sanitary condition possible by scaling and polishing all the teeth and the mouth should be thoroughly sprayed with antiseptic and cleansing solutions just prior to the incision. If the operation is upon one of the upper teeth the lip or cheek is pressed well up over the root and the pressure made with the finger upon a small cotton roll in such a manner as to press the soft tissue above the gum tight against the bone which will largely control hemorrhage. With a sharp lancet, a crescent or V-shaped incision is made through the gum and periosteum with its apex downward and centering over the middle third of the root. Beginning at this point, the periosteum is dissected from the bone upward to a point in the middle a little higher than the position of the two extremities of the initial incision. The V-shaped flap of gum and periosteum is then lifted up and caught under a fresh cotton roll and held against the maxilla with firm pressure of the index finger of the left hand. This should expose to view an area of the process over the apex of the root from three-sixteenths to three-eighths of an inch in diameter. This should be all cut away with a trephine of fissure bur in the engine. A free opening to the seat of the diseased bone is necessary so that not only may instruments be introduced to complete the operation, but to afford a view of the inside of the pocket to be curetted. If the periosteum has been carefully dissected from the bone to be cut away for this opening, there need be no anxiety about the reproduction of bone to fill the place of that removed, and there is no injury done and much to be gained by a free opening through which to operate.

Through this opening the carious pocket is explored and curetted into every recess with both hand and engine instruments until every particle of diseased tissue has been removed and washed out with hot water, then the apex should be amputated by piercing the root with a spear drill through its center and cutting to right and left from this with a small, sharp fissure bur. All of the apical portion of the root which has been affected by the disease should be removed and care should be used not to leave rough or sharp edges at the point of excision. If the removal of diseased tissue has been thorough there is little need of medication other than what may be necessary to maintain as nearly as possible a condition of asepsis. The use of hydrogen dioxide should be discouraged, although it may be of some use as a wash immediately following the curetting, but is probably of no more value than hot saline solution. The main thing here is to make the irrigation thorough and remove all debris before packing the cavity with gauze. If the general health of the patient is not vigorous and particularly if there are indications of malnutrition and anemia, it may be well to stimulate repair by cauterizing the walls of the pocket with aromatic sulfuric acid

followed in two or three minutes by a wash of warm water to remove any excess of the acid and to allay any pain following its application. If there is any uncertainty as to the thoroughness of the removal of all diseased tissue, the cavity should be firmly packed throughout with iodoform gauze for twenty-four hours. Upon the removal of this tight packing one may ascertain by exploration if there are any points needing further curetting. The cavity may be much enlarged if desired, by continuing tight packing for several days. Repair will not commence while the cavity is tightly packed. This matter of packing is an important point in the treatment of the case from this stage forward. Many have retarded healing for long periods by injudicious packing and also by the use of drugs at too frequent intervals which destroy granulations. Hydrogen dioxide should rarely be used after the first sitting and, personally, I seldom ever use it. The purpose of the operation is to *remove* the diseased tissue and the original cause. If this has been accomplished, there will be small demand for the use of drugs.

It is my practice to see the patient twenty-four hours after the operation and thoroughly irrigate with hot sterilized water and then set up a sufficient hemorrhage to fill the cavity with blood. Then I place a packing of iodoform gauze in such a manner that it tightly plugs the opening but does not reach the bottom of the cavity.

Forty-eight hours later this packing is changed for a fresh one similarly placed following thorough irrigation with hot water. This process of irrigating and packing is repeated at intervals of forty-eight hours or more until the pocket is filled with new tissue, each successive packing being left a little greater distance from the bottom of the cavity to allow space for the formation of granulations. As soon as the last packing is removed, the V-shaped flap of gum and periosteum that was first dissected off to make a place for the entrance through the process, will begin to crowd down and fill the opening in the gum. Proceeding in this manner, the wound heals from the deepest point and leaves less of a depression and almost no cicatrix. In from one to four weeks, according to the amount of tissue removed, the healing is usually complete.

When caries occurs around the roots of teeth that are inaccessible, it is sometimes better to extract the tooth, curette through its socket and replant it. It is always better to extract the tooth and leave it out, than to tolerate the existence of such a condition of disease at its root.

I think we are many times too conservative upon this subject of extracting teeth and try to save old diseased roots that are of questionable value when saved. The danger of serious complications arising from these diseased conditions about the apices of tooth roots is very great, and the fact that the connection between cause and result is often very obscure, makes it all the more necessary to certainly dispose of these cases in such a manner as to insure the health of the patient against their insidious attacks. This can only be done by stopping the progress of decomposition. I do not think

it is possible in more than a very few cases to treat these conditions through the pulp-canals and effect a cure. It is often possible to quiet the inflammation and stop pain, but to really restore the periapical tissue to a healthy state by such procedure is wholly out of the question in all cases where the abscess has been existent for more than a very short time. As shown by Dr. Upson, the danger of grave disorders of the nervous system, resulting from obscure dental lesions, the existence of which is often unknown to the patient, should teach us that we have not succeeded when we have merely disposed of the discomfort a tooth may be causing. The tooth and its adjacent tissues must be put into a healthy condition or it should be removed from the mouth.

DISCUSSION

DR. W. G. EBERSOLE, Cleveland: After two such learned and practical men have spoken, as those who have preceded me, there remains but little for the rest of us to say. As has already been stated, Dr. Kenyon has given us an excellent and timely paper. I have long since recognized the need of some one coming to the front and taking up this all-important question, and, I, therefore, say it is a most timely paper.

I will not spend time going into all sides of the question, because there is so much that might be said, that one must select certain phases of the question and confine oneself to them.

Therefore, as to etiology, pathology, diagnosis and prognosis, I am going to leave them, in the main, in the hands of the essayists, and those who have preceded me, or those who are to follow, confining myself chiefly to the management and treatment of those diseases, simply referring to the others in a minor way.

Of the causes, there are but two to which I care to refer—one, “that of using irritating drugs” and the other “the slovenly and indolent habits of the dentist.” There is no question but that these two causes are responsible for the great majority of these cases, and I agree most heartily with the essayist in his condemnation of these methods, and yet I wish to say that there are reasons why such conditions exist.

Just so long as the profession and the public continue to look upon treatments in the light they do, from the financial side, just so long will frequent cases of caries of the alveolar process be before us.

I believe that the great proportion of the success obtained by the dental profession during what we may call the Arsenic Period, is due to the mummifying effect the arsenic has upon animal tissue. I believe that we are more thorough in our root treatments today, as a whole, than the profession has ever been in the past, but I also believe that the introduction of mummifying pastes or other proprietary root canal dressings is going to bring about a condition, in the near future, which will produce a shock to the profession that will take some time for it to overcome.

I want to endorse most heartily what Dr. Kenyon has said in regard to the sealing of dressings in cavities, using gutta percha or some other compressible stopping, as a possible cause for a number of these conditions. I agree with him that septic material might be forced through, by the use of high pressure anesthesia; the application of arsenic with a compressible stopping is also a source of great danger, and I wish to most emphatically endorse his statement that the filling of the apices of the roots with irritating substances, such as cement or gutta percha points, with metal reinforcements, are many times of a decidedly damaging nature.

I do not think any man justified in using preparations of which he knows little or nothing as to their effect upon the tissue, in root canal treatments.

TREATMENTS.

I thoroughly agree with the essayist in the first stages of his treatment and in his

filling of the root canals, but when he, as he does, leaves the impression that it is necessary to open into the alveolar pocket and curette it in all cases, or any thing like all cases, I wish to enter a most vigorous protest. That there are cases which demand this kind of treatment, there is no doubt, but the vast majority of them call for no such heroic treatment; if the root canals are properly handled and filled, more than seventy-five per cent of these cases will be restored, in time, to a normal condition. The physical ability of the tissue to handle pathological conditions should first be given an opportunity to assert itself, and then in case of failure on its part to successfully cope with the lesion, and then only, should the alveolus be opened into, and curettement take place, accompanied by amputation of the apex of the root, if necessary. Of this operation, up to the completing of the curettement and amputation part, I wish to endorse the technic of the essayist; simply making the comment in passing that there is not one man in ten capable of performing this operation as it should be done. From the point where the cavity has been washed out, with, preferably, a normal saline solution, the technic of the essayist is, in my mind, faulty. I do not believe that there is one case in fifty that should be packed with iodoform gauze or any other kind of a packing, and I believe that the experience of the most successful surgeons will bear me out in this statement. The only case where I think the use of gauze packing is permissible, is where there has been a very *large amount* of the osseous tissue destroyed. Under no circumstances do I think that we are justified in using iodoform gauze in the mouth. Iodoform itself is almost as offensive and disgusting as the pus. If necessary to use gauze, simply use the sterilized gauze, which will answer every purpose and be far more acceptable to the patient and his or her associates.

After curettement and amputation, the pocket or cavity should be washed out with a normal saline solution, using sufficient force back of the jet of solution to cause the dislodgment of particles of decayed bone. Antiseptic solution, other than the normal saline solution, should not be used, if the best results are to be obtained.

There are two very important statements that I want to impress on every member of the profession here present this afternoon. The first one is that any antiseptic solution strong enough to exert any destroying or any inhibitory action on the vegetable cell, (the microbic cell) wields a far greater destructive influence upon the animal or tissue cells, leaving the physiological cell in a pathological condition, incapable of filling its normal function, and when the force of the antiseptic solution is spent, the animal cell is left in a most excellent condition to succumb to the inroads of pathological germs, owing to its lowered or lost vitality.

The second statement that I wish to make is, that the normal saline solution is *nature's own* antiseptic solution, and when this solution is normal (that is, when the blood is in good condition), and the part or parts are in a condition where it can pass through or around them, there need be no fear of infection.

Some few years ago Dr. Ira W. Brown made a statement before this body that distilled water was the best antiseptic solution to use in the mouth and insisted that he obtained his best results through the use of the same. We gave him the laugh—yes, we all ridiculed this water treatment, and many stand ready to do the same today, but I tell you, gentlemen, there is more truth in it than we are willing to admit.

The writer was a member of the first class of medical students, in Cleveland, to study bacteriology, and from that time the professors of both dentistry and medicine have developed into professors of bug chasers and destroyers. The motto was to get rid of the micro organisms at any cost; everything else was lost in the mad rush in this direction. It remained for the little yellow surgeon, during the recent Russian and Japan war, to call the halt. Every one present will remember how astonished the surgeons all over the world were at the wonderful surgical results. The cry was then, nothing but water. WATER. WATER. It was water sterilized, normal saline solution, when possible, water with a little common salt, when convenient, but in any case, water and

plenty of it, and the result was a mortality lower than ever known to the civilized surgical world.

But to get back to our operations: I say to you, use *normal saline solution* and nothing else in cleaning and sterilizing these pockets and after flooding them take an instrument and start copious hemorrhage, then draw down the little flap of tissue that the essayist told you about, and stitch it into place and let nature take her course. Imagine, if you will, what that V-shaped flap of gum and periosteum has been doing all the time the essayist has been having his fun, and the patient his hell, while the good doctor has been poking in his iodoform gauze and pulling it out, and scratching the sensitive granulation tissue to make it bleed. Of course, this little flap just stands up there waiting for "four weeks," if necessary, to be taken down and let do its part.

Now as to root amputation: I wish to say that there are very few men that are capable of performing this operation as it should be done. So few are skillful enough to cut the root off and leave a smooth unirritating surface. It is the writer's belief that more men would be successful in difficult cases if they followed the writer's method of replanting.

There is one class of cases or cause of caries of the alveolar process that the essayist did not mention, and that is, where roots have been perforated. In almost all of these cases replantation is the only solution of the problem. The method of replantation which I follow, in brief, is to use *no antiseptic solution* but warm normal saline solution in socket or around the tooth, keeping tooth both warm and moist with it. Amputate and fill all opening, whether normal or mechanical, with gutta percha and replace and retain by wire splints.

PREVENTION.

Now, gentlemen, a word as to the prevention of these conditions. There is much that I could and would say here, but I have already spoken too long. The great cause of most of these conditions is and has been the value placed upon the service rendered by both the dentist and the patient, and for this condition the dental profession alone is at fault. When men will perform an operation, which, in many cases, requires more skill than it does to remove an appendix, and place a financial value on it, less than that charged for small gold filling or inlay, just so long will we find dentists using mummifying paste, oxpara and kindred preparations, and just so long will you find slovenly work being done.

Formerly, the man with some conscience, if the patient would not pay a fee to justify treatment, consigned the difficult cases to the forceps. But the time has gone by when a man dare follow these methods, if he has any soul to save.

The most important preventive I can recommend is, that for this most trying and nerve racking, difficult and exacting part of our work, we charge a fee per hour on a par with the other work we do and explain to the patient why we do so and there will be but few cases of this kind compared with those existing now. You say it can't be done. Let me tell you of an experience: a family came to me for service; a daughter had several gold fillings (malleted or cast) inserted. They averaged ten dollars apiece and were settled for without a murmur. Later a son, and the head of the family, came to me with a putrescent pulp and the tooth was treated and a gold inlay installed, requiring three appointments to complete the work. The fee was twenty-six dollars. The bill was mailed and in came the patient to see where the mistake was. When told that the bill was correct, he began to froth at the mouth as though he had hydrophobia. He wanted an itemized bill and when he found that the inlay cost twelve dollars and the treatment fourteen dollars, that was the last straw. He told us of dentists, and good ones, too, who had treated this and that tooth and charged for treatments from three to five dollars. Well, we collected the fee and lost the patient, and that poor deluded man is wandering about the city, somewhere, still crying "robber and thief," and the sad part

of it is that he finds men, who are ready and willing to take up and use this same cry. It has been used in the past and is used at the present time, against men who have been charging a reasonable fee for treatment cases. Few men have had the moral courage to charge, for this class of work, fees in just proportion to that charged for other work, and to them and members of the profession we owe a vote of thanks and not a kick. They should receive a boost and not a knock, for every tooth they treat and make a just charge for enables the kicker and knocker to charge a fee which will justify his doing thorough work instead of using mummifying pastes and doing slovenly work, because he feels he cannot collect a fee justifying the effort and energies put forth.

DR. W. H. WHITSLAR, Cleveland: The paper of Dr. Kenyon is meritorious because it recalls the same thoughts as presented by Prof. Black in the *American System of Dentistry* published twenty years ago.

Many of these operations would not be necessary if the pulp-canals had been properly treated.

One of the discussers said that, "Only a few dentists are qualified to perform the operation recommended in the paper." I believe they are qualified but lack the courage or confidence to do it.

As a packing after the operation Bismuth paste, as recommended by Dr. Black, of Chicago, I find to be better than gauze. I use a high-pressure dental syringe, Imperial Dental No. 2, with a large nozzle attached to inject the paste.

DR. F. ACKER, Cleveland: I would not advise having this operation of Dr. Kenyon's unless the diseased tooth could not be restored to a healthy condition by medical treatment. The average patient can not afford to give the time, or has not the patience for a surgical operation where the necessary, protracted after treatment takes as long as advocated by the essayist.

In treating diseased root canals where there is a fistula I syringe thoroughly with a mild antiseptic such as carbolized Iodin, pack the canal with cotton dressing dipped in Cresol (not creosote) but with no excess of fluid and hold in the treatment with a gutta percha temporary stopping. I do not believe that a cement is more impervious to infection from the outside and in case of need the ability to open with a pin and allow escape of gas or fluid makes gutta percha safer for the patient if he can not secure the practitioner's services at once.

The after-treatment advocated by Dr. Kenyon—packing the wound with gauze and each day or two repacking till healed—seemed poor surgery for a wound in the mouth. The impossibility of keeping the dressing aseptic and the nicety required to hold such a packing in place make it almost impractical.

DR. KENYON: (Closing the discussion.) I do exactly what I say I do in my paper. If one has not had success in a clinical experience, it is no reason that another may not have. There are cases that some of us cannot possibly handle, which others may handle successfully.

There are root canals that cannot be filled. Many cases have come under my observation that were impossible of preservation. The most of these cases are due to carelessness. I have removed many large fillings where the cavity had been filled without any attempt to treat the diseased pulp canal. A man who will do such a thing as that is not fit to practice dentistry.

Some may have success with one treatment and others with another. Dr. Price can seal a cavity with gutta percha so it is healed perfectly, and I can seal with calxine cement what I cannot with gutta percha.

Dr. Price calls attention to my performing this particular operation all of the time. I do not suppose I do this in one-tenth of my cases. I do not think that every case should be treated this way, but when a tooth is thoroughly diseased and cannot be restored to a healthy condition, this operation will frequently cure it when nothing else will.

Dr. Ebersole says iodoform gauze leaves a disgusting sensation in the mouth. I

never had a case in which the patient complained when I used gauze. Maybe the iodoform I used was not so strong as that used by others. I like to know what is going on in the pocket until it is healed, so use packing and leave the bottom without pressure, and it keeps the cavity in an aseptic condition.

Oxychlorid of zinc makes fine root filling when used in well selected cases. I have removed fillings containing formaldehyde, and I do not think it has any place among permanent root filling materials, as it is not necessary to have irritating material in permanent root fillings.

AN ANTISEPTIC ROOT FILLING *

By Hugo H. Meier, Fort Wayne, Ind.

PERMIT me to offer for your consideration, the formula of an antiseptic root filling and technic, which in its cardinal principles, and from a personal and perhaps selfish viewpoint, I think to be most excellent.

The greatest demands of an efficient root filling are: 1, service; 2, ease of insertion; 3, antisepsis. Therefore, taking first the last named, antisepsis, we will analyze its constituents and see whether it is what we desire.

(a) Creosote, considered first, we find to be a product of both wood tar and coal tar, procured through a process of distillation. Of wood tar creosotes, the beechwood product is considered the standard of excellence. It is neutral or slightly acid in reaction, having a penetrating, smoky odor and a burning caustic taste. It is anti-tuberculous and antiseptic. These properties are essential. The only probable contra-indication is that it has a tendency if used too freely and care is not exercised to remove excess from tooth, to discolor the tooth structure.

Oxide of zinc, a white odorless, tasteless powder, is another constituent. It is a drying antiseptic and astringent, which are commendable properties in any root filling.

The third constituent, tannic acid, is an excellent astringent and styptic.

The oxide of zinc and tannic acid should be taken in equal parts by weight and pestled until a homogeneous mass in a mortar of sufficient size to permit free incorporating action. This mass is left a powder until ready for use. When the filling is to be used two or three drops of creosote are placed on cement slab—the amount varying with number of roots to be filled—the powder incorporated with the creosote by thorough spatulation until the paste is of sufficient stiffness to prevent running, after which it is placed in the roots with smooth broaches, blunt ends. After practice has accustomed one to the technique, roots which it would be most difficult to fill with gutta percha points, can be filled with approximate ease.

In this combination we have a root filling which, given a trial, fair and impartial, will prove itself worthy of continued use.

It has the requisite ease of insertion, antiseptic properties and stability; beside these it is drying, anesthetic and mummifying, and should necessity demand its removal, it is not sufficiently hard to prevent removal with reasonable ease.

*Read before the Northern Indiana Dental Association, September, 1909.

I do not credit myself with the origin of this formula, but shall say that I have given it thorough tests, ranging over a period of five years, and have *never* found it wanting.

Permit me then to recommend it to your use.

DISCUSSION.

DR. W. H. SHAFFER, North Manchester, Ind.: In connection with what the Doctor has said with reference to root filling, I remember some years ago I attended a meeting at Maxinkuckee, I think it was about twenty-one years ago, I may be mistaken as to the time; however, I remember several things that were said at that meeting with reference to root fillings. Among them a formula for root filling was given consisting of carbolic acid, one part; oil of cinnamon and oil of cloves, two parts each. It is convenient to use; always ready and you will be astonished how far it goes—an ounce will last for years. The only addition I have made to this formula is iodoform. Take a small bit of cotton twisted around a broach, saturate it with this liquid then dip it into the iodoform and pump it into the root, being careful to get it to the apex if possible. Follow this with the use of chloro-percha and iodoform, pumping it as far into the root as you can.

DR. Brophy of Chicago says that if too much oil of cassia is used it will discolor the teeth, which, likely, is true, but it isn't a question of quantity but of thoroughness of doing the work. The only objection that can be urged to this is the odor of the iodoform. I do not believe that is much more objectionable than that of carbolic acid. However objectionable, it can be overcome by the use of the extract of vanilla on the hands and on the instruments which have come in contact with it.

I have used this method of root-filling all these years and I have never had a failure where I was able to obtain access to the apex of the root.

DR. S. L. GANTS: I am very sorry that my father is not able to be here this morning as I think he could speak on this subject of filling the root canal in a way that would be of interest.

He has been practicing dentistry for about fifty years and his first method was to place in the root a small amount of cotton dipped in carbolic acid and pack with gutta-percha rolled to a point. He has many cases that have been filled this way for forty years and says that he remembers of scarcely any failures. At different times when I have had occasion to open the canals I have found this old filling in good condition.

The method I use is, after removing the nerve, swab with carbolic acid, and after drying, fill with chloro-percha and a point. For a putrescent case, when ready to fill, use the same method, and you will find very few failures.

H. T. BERKEY: I am very sorry that I have no discussion to make for this paper and will probably not be able to say much, as I did not know I was on the program, nor did I know what the subject was.

I find I can not agree with the Doctor in every respect. Did I understand him to say that he used this point and paste in the root canal? (No.) The reason I do not agree with him is, I do not think a man can fill the root canal with paste without also using a point.

DR. O. A. VANKIRK: Dr. Meier's canal filling, has, I think, the requisities of a good filling. I have very good results by using the following formula:

Menthol and zinc oxide equal parts for the powder. Formalin and creosote equal parts, cleared with a few drops of alcohol, for the liquid. Spatulate well, enough of each to form a creamy liquid.

After working this as near as possible to the apex of the tooth, crowd in a gutta-percha point.

In some teeth where the pulpal cavity and canals have been open to the fluids of the mouth for years, especially molars, where I have been unable to open more than one-third to one-half the canal, I have used this preparation. To my knowledge in the past five or six years that I have used it, not a single case has caused any trouble.

SOME PRINCIPLES OF RETENTION IN ORTHODONTIA

By Martin Dewey, M. D., D. D. S., Kansas City, Mo.

(Continued from page 891 November Summary.)

THE ADVANTAGES OF AN ACTIVE FORCE IN RETENTION AND SIMPLIFIED APPLIANCES.

Having stated that the use of stationary intermaxillary retention was discontinued in my practice because it held the teeth too firmly, I will try and explain why such a condition is not to be desired, as it was long thought to be exactly what was wanted. As I stated before, if teeth are held too rigidly the forces of occlusion, or the natural forces of retention, can not be established. This is a short and positive statement and one which took some time to be realized, the "why" of which I will try and explain.

In the normal dental apparatus, each tooth is so placed in the arch and held by means of the periodontal membrane, that with the forces of mastication, it gives or moves slightly. The force of mastication placed upon the teeth causes the process to thicken in certain parts of the dental apparatus so as to overcome the stress. If the teeth are used to a great extent, the fibres of the periodontal membrane and the alveolar process will be stronger than if the teeth were not used as much. Therefore, the factor which is responsible for the development of the structures which support the teeth is Use. If a retainer is so constructed that all of the force of mastication which falls upon the teeth is resisted by the retainer, there will be no need for the periodontal membrane and the alveolar process to develop. In other words, if the teeth are supported by mechanical means or by mechanical forces, the natural forces will not be called for. How often have we heard of the retainers having been removed and the teeth were found to be practically as loose as when the appliance was placed on them? In a great majority of such cases, the trouble lay in the construction of the retainer, it being so made that all of the force of mastication was absorbed by the mechanical device, and there was no call for the establishing of the normal structures which support the teeth. Therefore, I say again, *antagonize the backward tendency of the teeth only*, and do it in such a manner as to *stimulate the establishment of the natural forces of retention and not retard them*. This can only be done by the use of some device which will permit the teeth to respond to the forces of mastication, and by the employment of an active force of retention, when demanded.

A few things which should be remembered in the construction of an appliance, if we want the teeth to be as nearly in a normal condition as possible, are: Avoid all retainers which are rigid enough to support the teeth so as to prevent their yielding to the forces of mastication. No two teeth should be retained by means of bands that are soldered together, for the bands would not only be liable to be loosened but the structures supporting the teeth would not develop as they should, owing to the fact of the teeth being unable to respond to the natural forces. Teeth which are united

by means of bands and spurs should have the spurs long enough so as to permit of the teeth responding to mastication by the yielding of the spur.

Very often when teeth have been moved a considerable distance, they do not occupy the proper relation to the line of occlusion that they should. If nothing interferes with the natural forces of retention, we find as a result of these forces that the tooth soon occupies the position it should. This is especially true with the premolars and molars.

Another factor which has been the result of a large number of failures in retention is interference with the interproximal contact, interfered with at a time when the practitioner thought he was doing the best thing for the case. In order for the teeth to become locked in the arches as they should, they should be free to "knuckle" against each other. This is often prevented by the use of too many bands in retaining. It has long been known to be desirable to eliminate as many bands as possible in regulating, and I now say to eliminate as many as possible in retention, regardless of the fact that some are advocating the wholesale banding of teeth, to avoid the decay of same when using precious metals. *Every time you use a band in retention, you interfere with the normal contact of the teeth.* When the retainer is removed, the teeth have to settle to a certain extent, and that may be just enough to allow the contact points to pass each other, and the result is that a contracting arch is again started to forming. Therefore, depend on an increased number of spurs and as few bands as possible.

The advantage of active retention over passive is just the advantage that exercise has over rest in the development of any part. It is the advantage the drop of water falling upon the rock has over the passive condition of the rock. The rock is the larger but the water gradually wears the rock away, as once the rock is worn away it has no means whereby it can be restored, while the drop of water is active all the time. Anything to develop should be used, and after the teeth have been moved in the correction of malocclusion, we desire to have as early development of the supporting parts as possible. Of course the parts are stimulated to growth by the forces of mastication; but if they can be stimulated by an active force of retention, we get about the same result we would have if the patient should masticate upon the teeth 24 hours each day.

Another thing which must be considered, is that in most cases, especially in Class II and III cases: after the teeth are in proper mesio-distal relations, the parts are on a certain tension for a considerable time. That is, the springs of the bone spicules, the pull of the fibres, the abnormal relation of the muscles, are tugging to get the teeth into their old position. There is an active force trying to pull the teeth back into old relations. You will remember that I called your attention to the fact that the molars tipped in Class II cases when the simple intermaxillary retention was used (plane and spur), and the tipping was the result of the above-named forces, which were being counteracted by a passive force. Like the drop of water and the stone, the backward forces were working all the time, and finally

the simple, passive retention yielded a little, it had no way to regain what it had lost; soon it yielded a little more and finally, like the stone, which finally was worn away by the water, the retainer was useless, and the teeth back to their old position of malocclusion. Those of you who have been depending upon the passive intermaxillary force of retention know you always had heart-failure when a patient on whom you had placed retainers before she left, came back from vacation.

The first advantage of active retention can be stated by saying: as you have a condition in the structures which is active in trying to get back to old positions, it would be much better to counteract them by a force which worked directly opposite. That is, equalize the backward pull by a forward pull. You then have a force which is working 24 hours counteracting one that is working the same amount of time. Also, as it is known that the forces of mastication cause the development of supporting structures, an active pull on the teeth would also act as a stimulating factor in the development of the periodontal membrane and alveolar process. The result of all this is, that the teeth being held in such a manner as to yield to all the forces of mastication, the constantly active force of the backward tendency being counteracted by a forward one of equal force, plus the fact that this constant force acts as a stimulant and causes more rapid establishment of normal forces, is an earlier result, which we call normal occlusion. And all of this is the result of active, intermaxillary retention which I will describe in my next installment.

(To be continued.)

PACKING AND VULCANIZING WITHOUT REMOVING TEETH FROM MODEL

By Carl E. Klotz, L. D. S., St. Catharines, Ont.

Under the above heading an article appeared in the June number of THE DENTAL SUMMARY.

The idea is very good and one that I have practiced, with a slight modification, for many years, but I think the author of the article makes a mistake in covering the rubber with wax. You will find that in packing a case, when a little wax is accidentally left on the model that the rubber, after being vulcanized, is softer on the surface, particularly pink rubber, at this place where the melted wax has come in contact with the rubber, and cannot be polished so nicely unless a great deal more vulcanite is scraped away than otherwise would be necessary.

What is required after the rubber has been packed, is a covering to prevent the plaster in flasking from running in between some of the layers of the rubber, under it, or between it and the teeth, as it is impossible to press the rubber so firmly together with a warm spatula as under the pressure of the bolts of the flask.

To cover the rubber I use paper or the linen that comes between the sheets of rubber as we buy it. Cut pieces a little larger than the rubber to be covered, soak either well to make it limp and coat one side with any paste, with this cover rubber and surrounding, press to place with a wad of cotton. The model and teeth should be dry, so that the paste will adhere to them. This will prevent the plaster, in flasking, from running into the spaces, and you will have no trouble in polishing.

OXYCHLORIDE OF ZINC AS A CANAL FILLER

By H. M. Semans, D. D. S., Columbus, Ohio

IN THE minds of most operators there has never been any doubt but that oxychloride of zinc cement, as a root canal filler, is of very high class. Three difficulties, however, have stood in its way which have precluded its use as a canal filler with many.

First, the fear that if the necessity should arise, it would be next to impossible to remove it from its firmly set state in the canals. Second, fear of irritation at the apical ends, producing pericemental troubles. And third, failure upon the part of many attempting its use to properly fill the canal or canals before the cement hardens, thereby making a botched job.

The first objection is one that should not be entertained in this day of exact therapeutical treatment of diseased conditions of teeth, as the almost always certain cure of such conditions is within the control of all skillful dentists. The exceptional case, however, which leaves a doubt in the mind as to a sure return to normal conditions, is well taken care of at the source of the cause of all the trouble by the cement's well known antiseptic qualities. It is scarcely necessary here to go into detail concerning the ability of oxychloride of zinc to act as a perfect antiseptic stopper for canals; we are all familiar with tests that have been made by Dr. A. E. Webster and others in that direction. And the fact that it sets to a very hard resisting condition should recommend its use to all. It certainly is a pleasure to find it occasionally occupying canals of those teeth that have been sadly neglected by their possessors, which teeth, or rather roots of teeth, require crowns and bridges. Examinations in most of such neglected cases show dissolved-out or washed-out canals which formerly contained antiseptic cotton fillers or unstable mummifying pastes, or else loosely fitting gutta percha points. If I knew that the former dentist had used oxychloride of zinc in the canals of teeth that required crowning on my part, I would not give a moment's consideration as to the welfare of such teeth.

The second objection to its use, the possible irritation of parts beyond the apical end, is an objection that is no longer considered by its users, as it has been shown in its constant use that such irritation, if there is any, is of a very slight nature, probably no more than is found in the use of other fillers. My experience is of almost entire freedom from after irritation. The fact of the matter is, all bad results from passing of material

through apical ends does not rest as a fault of oxychloride of zinc; while on the other hand canal points having passed through remain as a permanent source of irritation.

If nature in restoring parts can slowly absorb away objectionable foreign matter, chronic pathological conditions will seldom, if ever, be met with.

The third source of trouble, the failure in its manipulation, is a trouble easily overcome when the operator learns two things—first, that oxychloride of zinc is unlike oxyphosphate of zinc in the method of mixing a consistency that will give good hard results. If oxychloride should be mixed to as thick a batch as oxyphosphate of zinc, the former will have set so rapidly that manipulation would be utterly impossible; on the other hand should oxyphosphate of zinc be mixed as thin as oxychloride of zinc, the former would probably require hours to set and then have no strength at all. No, oxychloride of zinc must be mixed to a very thin cream-like consistency, a little of its liquid occasionally added might do no harm. In its creamy condition it thoroughly paints the canal walls, and any number of successive creamy batches may be easily and thoroughly pumped into the canals. I find an old dulled broach to be excellent to start with, finishing with smooth broaches and pumping in the material by a gradual pumping withdrawal of the broach. Spiral broaches also are most excellent for this purpose.

The second consideration concerning it is that moisture allowed to enter an uncorked bottle tends to produce a very rapid setting material. Bottles containing liquids of any of the cements should always be corked when not having some of the contents withdrawn.

If there is doubt as to the apical conditions, if the operator should desire its removal as a possibility, gutta percha points may be worked in unison with it. I find that a dash of aniline mixed into the cement to be a good color guide, in burring out the canal for dowels.

PROGRESSIVE FEATURES OF SOME STATE DENTAL LAWS*

By George F. Burke, D. D. S., Detroit Mich.

A READING of the different state dental laws, together with the comments and criticisms that are made on them, as well as those who are chosen to enforce the laws, leads one to believe that the method of appointing members of state dental boards in many states is not the most desirable, that there is a great difference in the educational requirements, and also that there is need of more publicity in connection with state board affairs. These features in particular, together with others of lesser importance, are what the writer desires to call to your attention in this paper.

As the members of state boards are authorized to conduct the examination of applicants for license, together with the enforcement of these laws,

*Read before the Michigan State Dental Society, Kalamazoo, Mich., June, 1909.

and as the manner in which these laws are enforced depends on the activity and character of the membership of the boards, let us first consider the various methods by which the members are chosen:

In quite a few states, and this includes Michigan, the governors can select members for the boards at random from the list of registered dentists in those states. This system is certainly open to criticism in that those with political influence sometimes receive these appointments, irrespective of their competency to fill these positions. This is not meant to infer that many excellent men do not receive these appointments under this system, but fitness for the office is not always the first consideration. Political scrambles for these positions frequently result in incompetent appointees, who have neither the confidence nor good will of those who desire a proper administrator of state board affairs.

The majority of state laws, however, provide that the governor can make his selection only from lists prepared by the state dental societies in those states. This method is much safer, and results in a much more uniform and higher grade of men on these boards.

In New York state, where there are several district dental societies, each district is represented on the board. When a vacancy occurs in any district, the society in that district nominates two candidates, one of which is selected to fill the position by the Regents of the University of the State. The matter of selecting board members is, therefore, in the hands of the profession, where it should be. So far as the writer can ascertain, this is the ideal way to make these appointments, as the members of a district dental society are best qualified to pass on the fitness of candidates for these positions. It further insures that the various sections of the State are represented geographically.

The difference in educational standards required by state boards for a license to practice is of very great importance, particularly at the present time, because of the bearing that it has on the interchange of license. New York State requires that an applicant for license shall have a preliminary education equal to four years in a high school or its equivalent, and a diploma from a registered dental school. Some states provide for no standards in their laws, these matters being left entirely to the boards, which is a great mistake, as both the preliminary and professional requirements should be written into the texts of the laws.

Between these extremes are various shades of requirements, both preliminary and professional, and these varying standards are in the opinion of some, who have studied this question, the greatest drawback in bringing about reciprocity.

The Editor of the Australian Journal of Dentistry, referring to conditions in that country, has summed the question up as follows: "To our way of thinking, the question narrows itself down to two elements of fundamental character, if the dental profession is to be safeguarded in the

different states. First: There must be an equal law governing the whole in the different states. Secondly, and this seems to us the more important: The educational requirements of the course of study (including the preliminary), the practical requirements, and the examination of the students for the dental qualification must be absolutely equal and in detail.

Michigan, Pennsylvania, Vermont, New Jersey, Minnesota, Ohio, Iowa and Oklahoma are among the states that have inserted the reciprocal clauses in their laws. This is certainly a step in advance, and is in accord with a broad, liberal and fraternal spirit. Every dental statute should place it within the power of the board to establish interchange of license with other states having similar standards. Many state board members boast that they have no special examination for men of experience, which indicates a very narrow spirit. Both educational standards and methods of appointing state board members will doubtless become more uniform with age, and reciprocity will become more general, and those states that do not establish reciprocity will doubtless receive much criticism.

The desire of some practitioners to move from one state to another, without being compelled to submit to an examination is not the greatest benefit that will be derived from the extension of reciprocal relations. If a state has a dental college whose entrance requirements are low, and whose curriculum and equipment are not up to the required standard,—suppose that the examining boards in surrounding states agree not to accept for examination graduates of that school. This will result in one of two things—either that college is going to raise its standard or close its doors.

Reciprocity, therefore, has a larger and broader purpose in that it forces comparison of preliminary and professional training in various states, thereby bringing about a leveling-up of standards, and therein lies its greatest value to our profession—the same as is going on at the present time in the medical profession.

The subject of publicity in state board matters is one for which there is no provision made in most dental laws. Many inquiring minds would favor more light on these matters. In California, however, they have the following clause in their law:

All books of said board shall be of public record, and at all times open to public inspection. A certified copy of any part or all thereof shall be primary evidence in any court of this state. The original books shall be kept in the office of the secretary of said board, wherever he may reside, and he shall furnish to any person making application therefor a copy of any part thereof upon the applicant paying a fee of 25 cents per hundred words, so copied, the said fee to belong to the secretary; all copies shall be certified by the secretary.

This is a valuable clause and should be inserted in all dental laws.

In Pennsylvania there is provision made for publicity of another character. This state law provides for the establishment of a Dental Council, three members of which are state officials: The Secretary of Internal Affairs,

the Commissioner of Health, the Superintendent of Public Instruction, together with the President of State Dental Society, the Secretary of State Board of Dental Examiners. The Dental Council act as a supervisory or regulative power over the board of examiners, when members are appointed by the governor on the advice of the State Dental Society. All examinations on theory are written and the examination papers of the candidates are held open to the inspection of the public for the period of five years in the office of the Dental Council at the State Capitol. The questions may be published.

There are some good reasons for this publicity clause—the profession can judge as to the scope, adequacy and character of the examinations and, therefore, determine as to the fitness and competency of the board of examiners by both the questions and markings on the papers. It also indicates whether any impartiality or favoritism has been shown by the members of the examining board. Still another advantage is that it gives students and applicants for a license some idea in regard to suitable preparation to make for these examinations.

In quite a few laws one finds the following clause: "Every registered dentist will pay each and every year to the board of examiners a fee of one dollar as his annual due. Each payment to be made on the first of May each year. In case of default the license may be revoked." This feature of a dental law enables the secretary of the board to prepare an accurately revised list of the registered dentists in his state each year—it makes it clear to the secretary who is practising legally and who is not, and it is, therefore, of very great advantage in the proper conduct of this office.

Many state boards complain that they do not have the means to prosecute those who are practising illegally. This clause provides the boards with sufficient funds, in many cases, so that they are enabled to prosecute illegal practitioners.

There has been much opposition to this clause because of the desire of many not to be "taxed." Legitimate practitioners of dentistry should not object to helping the board by contributing a dollar each year for the purpose of keeping frauds and charlatans out of their states.

In California they have seven members on the board, each one of whom looks after a certain section of the state, and their law is vigorously enforced because they have some very active men on the board, and there is a strong sentiment in the profession in favor of enforcement. In their new law licenses are renewed only from year to year, accompanied by a payment of \$2.00 for each renewal. In case of neglect to renew one's license, he is subject to a fine. This gives the board plenty of funds to take care of the prosecutions. It is also anticipated that there will be less trouble in collecting the license fee than there was formerly in collecting the fee under the annual registration system.

Another very excellent feature of the California law is that in cases of illegal practice they have increased the penalty, thereby taking this class

of cases out of the police courts and into the superior courts where they hope to bring these cases before a more intelligent class of jurors and thereby secure a higher percentage of convictions. In the past they have had much difficulty in getting justice in the police courts, which is true in many other states.

In a few laws one finds the following clause: "Licenses shall be revoked for the advertisement of dental methods or specialties in which untruthful, improbable or impossible statements are made." So far as the writer has ascertained, there have been no convictions under this clause. Such clauses do, however, have considerable restraining influence over certain elements in these states. It is very doubtful, under our form of government, if public opinion would favor going so far as the English practice of limiting advertisements to name, address and specialty, if a specialist.

Massachusetts has recently added a very important amendment to her law which is intended to prevent dental companies and corporations from practicing as such. This is not expected to eliminate the dental parlors, but it will place a personal responsibility on the owner, which has not existed heretofore.

Most laws make no provision for paying the expenses of the delegate, appointed by the State Board, to the annual meeting of the National Association of Dental Examiners. The Nebraska law provides that expenses of such delegates shall be paid out of the funds of the board, which is perfectly just—there can be no good reason for asking these delegates to bear their own expenses on occasions of this kind.

Some unjust criticisms are frequently directed against dental laws and members of state boards, but, as a matter of fact, they have done a great deal towards putting a check on the loose methods in vogue in some dental colleges, and they have also prosecuted, convicted and driven from practice a long list of illegal practitioners, and therefore, they have been of very great service both to the public and the profession.

In the last few years there has been much activity in the direction of new dental legislation—there have been enacted many new laws, and a great many have received important amendments, but there still remains much to be done.

New York, Pennsylvania and California have dental laws that are conspicuous for their progressive features and should be read carefully by the legislative committee of various State Dental Societies.

The united effort of all interested in this subject to bring about legislation along the lines outlined in this paper would doubtless result in much benefit, both to the laity and the profession.

DISCUSSION

DR. A. L. LE GRO, Detroit: To discuss so able a paper and digest, of dental laws, as has been given here today is a great pleasure indeed and I want to discuss each and every one of the points that the essayist has brought out.

A point that is driven home in my mind is that the perfect dental law does not

exist so far and that it behooves every society in the land to see to it that at every session in the future it has on its program a paper that in some way pertains to dental legislation. Have it ably and freely discussed, that in the near future through the instrumentality of splendid organization we may get the desired legislation, that will be acceptable both to the profession and the laity. After all, the statutes of every state describing a criminal offense and punishment thereof are for the people and not any specific profession or body of men. The law is merely dental in so far as it describes the limits to which a dentist may go without committing a criminal offence.

The dental profession may busy itself in formulating desirable features for inclusion in dental laws of different states but this should be done with nothing in mind but a desire to safeguard the people, and at the same time necessarily give to the profession nothing but educated, honorable and respectable men. Therefore, we must secure the cooperation of the public by educating them to the point that only such men are fitted to practice dentistry. The public needs education with reference to these laws and they must have some incentive to educate themselves along these lines. It has been said that "public opinion is the supreme law in this country" and we will have gone a long ways when we have shown that dental prosecutions are not for gratification of selfish and vindictive practitioners but for the good of the public.

We know that these laws have greatly contributed to the education of the profession and its individual members, and by making some of the corrections that are suggested in this very excellent paper, it can readily be seen that the benefits to both practitioner and public that will accrue, will be great indeed.

The essayist has brought out some excellent points among which are:

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| 1. Preliminary education. | 7. Publicity of Board affairs. |
| 2. Reciprocal clauses. | 8. Renewing licenses. |
| 3. Selection of Personnel of State Boards. | 9. Prosecutions. |
| 4. Length of dental course. | 10. Temporary licenses. |
| 5. The people and the profession. | 11. Increase of penalty. |
| 6. Approved Colleges. | 12. Dental Corporations. |

Preliminary education is the meat of the whole thing. If legislation could be secured in all states and territories requiring a candidate to either pass a standard examination equal to a four year accredited high school or furnish satisfactory evidence of having had such a preliminary education before entering college, the great problem of reciprocity would be solved correctly. Unfortunately this state of affairs cannot exist until either all the colleges of the country decide to be honest with one another or are forced by legislation and competent state Boards to make these demands on their matriculants.

Unfortunately the time is not ripe for a National Board having power over all the states of the Union. To accomplish this it would be necessary to procure an amendment to the constitution of the United States and even then it is doubtful that such a procedure would prove expedient owing to the interference of state rights. One course lies open to us and that is affiliation with the N. A. of D. E., abiding by its dictates and where necessary forming our laws that we may by law be governed by that body. This necessitates the membership of each and every state Board in the national body and their honest inclination to abide by its decisions.

The most deplorable clause in the majority of our state laws is the one that puts the selection and appointment of Board members in the hands of the Governor. As a solution of this matter, I do not agree with the essayist. As I said before, dental laws are for the protection of the people and the people through their system of education should have a voice in selecting the members of the Board. I believe that a dentist whose name is considered for membership on a state Board should be subjected to examination as to his qualifications to examine, just the same as a physician or dentist, no matter what his credits and diplomas may be, is required to take when he enters

the army or naval medical or dental corps. The government does not take cognizance of the fact that a man is graduated from a number of schools. He must pass an examination to show that he is qualified. If these rigid requirements cannot be enforced then the prospective member should be compelled to have had at least five years of actual practice and to show by his activity, interest and accomplishments in dentistry his ability to occupy this position which should be considered one of honor. If the matter is in the hands of any dental society, it is bound to resolve itself into one of politics and we are not bettered.

In regard to the length of dental course I wish to call your attention to a proceeding of the N. A. of D. Faculties a few years ago which shows the spirit of unrest which is at work among the dental colleges. At one of the annual sessions of this body it was found expedient to go into a committee of the whole that individual expressions of the wishes of representatives of each of the dental schools might be obtained. The following is a tabulated report of the vote of that meeting:

- 4 schools voted for 4 years of 9 months.
- 1 school voted for 4 years of 8 months.
- 1 school voted for 4 years of 7 or 9 months.
- 16 schools voted for 4 years of 7 months.
- 1 school voted for 4 years of 6 or 7 months.
- 2 schools voted for 4 years of 6 months.
- 1 school voted for 3 years of 7, or 4 of 6 months.
- 5 schools voted for 3 years of 9 months.
- 3 schools voted for 3 years of 8 or 9 months.
- 5 schools voted for 3 years of 8 months.
- 1 school voted for 3 years of 6 or 7 months, or 8 or 9 months.
- 1 school voted for 3 years of 7 or 8 months.
- 1 school voted for 3 years of 9, or 4 of 7 months.
- 3 schools voted for 3 years of 7 months.

This seems to indicate a wide range of difference in opinions and shows that some governing body supreme should be accepted to regulate this matter and the N. A. of D. E. to me seems to be the body, if acting under the conditions I before mentioned. Personally and as a former member of the Michigan State Board of Dental Examiners, I care not where a man gets his education, if he has sufficient preliminary education, passed a creditable examination before the Board, and above all is adequately trained not only in those sciences that deal with health and disease of the oral cavity but in such a way to make him a broader, a more cultured, sympathetic humane man. The question of whether his education shall cover a year or two longer or less is one of secondary importance. The essayist has wisely pointed out the necessity of State Boards having lists of approved colleges and accepting only graduates of such colleges as candidates for examination. I would go farther and suggest that such a clause in our dental law would accept only such colleges as are approved by the N. A. of D. E. Then when all the states had become members of the national body, the preliminary and dental education of the candidate would be of such a high order that one examination would undoubtedly give him the advantages of reciprocity in every state in the Union.

Right here I would like to offer a suggestion for consideration when new dental legislation is attempted in this country. But three countries in the world accept the degree D.D.S. from American colleges. If I am correctly informed—Michigan University is given the preference and Harvard Dental School next. In any other country the candidates from United States, no matter what their qualifications, are required to take a course in an inferior dental school of the country in which he contemplates practicing.

It is one of the tenets of the American constitution to treat every one alike, but in this case we are getting decidedly the worst of it. I would therefore suggest that we incorporate in our laws that only a D. D. S. or D. M. D. of recognized United States

dental colleges or colleges of other countries that extend to us the same courtesy, be accepted as candidates for examination before our State Boards.

A timely suggestion of the essayist is the suggestion that a clause in each state law should make public the transactions of their Boards. The Michigan State Dental act of 1883 and I believe the one of 1907 expressly stipulate that the records, etc., of its Board are at all times open for inspection. This is very good but does not go far enough. A clause should be substituted that makes it compulsory for the secretary of the Board to send out annual and, if possible, semi-annual reports of its transactions to every dentist in the state. As the essayist says, we would then be able in a sort of way to judge of the fitness of the individual members to occupy the position of examiner. Prosecutions under any law are difficult indeed. There are hundreds of statutes in the laws of the state of Michigan that are never used owing to the great difficulty in securing convictions. Cooperation of both the people and dentists is necessary. Very few Boards are by their laws charged with attending to prosecutions. Board members should be examiners and not prosecutors and one law should provide for a man to attend to these duties. He should be paid a salary and this can be accomplished admirably if we insert a clause in our laws to the effect that every dentist in the state should be compelled to re-register every year at one or two dollars. This would give the Board money enough to keep undesirables out of the state and at the same time would keep every dentist in close touch with our state Boards. Many dentists have objected to this on the ground that it would be humiliating. Such is not the case as is shown by the experience of several states. In the states that have adopted this clause no unlicensed practitioners exist.

Temporary licenses have proven a thorn in the side of every state Board that has been compelled to operate under such a clause and they have been so universally condemned that it is hardly necessary in discussing this paper to say anything more than your essayist has offered.

An excellent point brought out in the paper is the clause in the California law that takes the offence out of the petty class and puts it in a class with misdemeanors that are only tried in the Superior Court of California which corresponds with the Circuit Court of Michigan. As the essayist has said, under such conditions a greater number of convictions are secured. In the majority of cases a man practices several months or even years in a community and so ingratiates himself with the people of his locality that it is almost impossible to secure a conviction. The clause would be a most admirable one to incorporate in our present law of Michigan.

In conclusion I would like to say a few words in regard to legislation regulating or rather abolishing dental corporations or so-called dental parlors and institutes of the quack variety. In my mind the only solution of the whole affair is to insert a clause in our law that makes it necessary for each operator working in one of these offices to have his name in the general name of the office—their names on whatever signs are used. I have not looked into the constitutionality of such a clause, but if found consistent with our present constitution, it would eliminate a great deal of rottenness that now exists.

DR. LOEFFLER: I must add my word of praise to the able manner in which these subjects were treated, both by the writer and by Dr. LeGro who discussed it. It seems to me, that if we give it the attention that it ought to have, we would have each year some one prepare a paper along this line, some man who is specially fitted for it. Today it brings out a great many points that we ought to think about, even though we do not act immediately. Something ought to be done not only to raise the standard, but to secure uniformity of legislation or do something looking toward that end.

Some of the Eastern States, as mentioned, are doing good work along this line. I think concerted action by the state society would go far toward clearing up some of these difficult points.

DR. HINES: It seems to me it would be very wise if we had some one who had authority to look after our interests when legislative matter comes before our state

legislature. Every other corporation having legislation which affects it always has some one down there to look after its interests. Pay someone to give it his time.

DR. BOWLES: I, for one, am interested in this subject and appreciate the excellent paper the essayist has read, also the excellent discussion Dr. LeGro has given us. I suspect that before a very great while more new legislation will be attempted in this state. The present method of appointing the state examiners, we know, is not wholly desirable, and the essayist has suggested that recommendations by the state dental society would be a better method than the present. Dr. LeGro thinks it would not be very much better and that politics would enter in. We do know that politics enter in today. The state society is conducted equitably and fairly, and I believe is wholly free from politics, and why it should not make recommendations to the governor for members of the State Board of Dental Examiners without that taint of politics I do not see. It will be a good thing, of course, when the public becomes so educated that it can make recommendations—but the millenium will also be a very pleasant thing. At the present time those who will stand by the "quack" dentists who are filling teeth for twenty-five or fifty cents and throwing in prophylactic treatment on the side, are many. If they go to a good man like LeGro, he will charge them more than that, and they are not able to distinguish between the two. It is going to be a long time before the public is educated to any degree of efficiency in this matter, and who is going to educate it anyhow? In the meantime, I think it is up to us to do something whereby this state society may have at least a courteous hearing in this matter.

DR. LEGRO: I think, Dr. Bowles, you have entirely misunderstood me. My suggestion in the paper was, through the instrumentality of the public, that the public educational system of the State of Michigan should have a voice in appointing the Board. Neither did I say that the state society should not have a voice in it at all. I asked for one voice in the selection of the Board. I think that should be distributed much as it is in the State of Pennsylvania, and then we will perhaps come nearer to eliminating the political features if we can distribute this patronage through several different channels, and that was the idea I meant to convey. I do not think we should go at it in a hap-hazard way and ask the public to do anything, because I realize, and we all realize that the public would be in no position to appoint a member of the Board, but through their representatives. Of course, the Governor is our representative but in my estimation he is a very poor representative. I do not speak particularly of this particular governor, for I think they all are working to a disadvantage because they have several cycles of politics working around them all the time and they do not know just exactly which has the purest influence that is being brought about, so I do not think it should be in the hands of the governor, but, as a matter of reconciliation to the governor, and especially the present governor of Michigan, if he is in power any more, we would have to give him the privilege of appointing at least one or two members.

DR. WARD: I was impressed somewhat with Dr. Bowles' suggestion. I was also impressed when Dr. LeGro read his discussion, although he disapproved of the New York plan of electing a board of examiners. As the essayist read that I took it that he approved of it and that Dr. LeGro disapproved of it. Now it is a point which is bound to come up in this society, and in dental circles from now on, whether or not that New York plan is good; and something for this society to look forward to is to eliminate eventually the establishment of any class outside of this society and the society will grow to a place whereby the governor will be glad to do it, providing our laws permit it.

So far as politics are concerned, I do not think the stand is well taken, because they exist even in church circles and every other circle, and there will be factions in the dental society, of course. But I believe the New York law in which men from the societies of each district elect its own representative is a good thing. The New York society has eight men on its board, and these are elected by the dentists of the State

of New York, one from each district, and it looks to me like a very admirable feature, one which this society could look to in some form of reorganization.

DR. HILDRETH: A matter came up in Muskegon, which made me think of this more than ever before. We have a lady there who has been practicing in the "Gratiot Dental Parlor," an advertising concern, who has taken the State Board, as I understand, at least three or four separate times, and who has fallen flat every time except the last one. Now, it seems to me as though the dental profession has been striving right along to raise their standard and make themselves more ethical in every way, and I cannot understand, in this particular, why such persons should be let through. I do not want to criticise the Board; perhaps they are more able to judge whether she was able to pass than we are, but it seems to me, if we are going to get competent men on the Board, there is nobody better able to judge than the State Dental Society of Michigan, when it comes to recommending men for appointment, and it would seem that they are much better able to judge than the Governor or some politician. Every corporation or private concern that is looking for a man to work for their interests would not think of considering the politics at all, they would first consider whether the man was capable or not, and it seems to me that the dentists of the State of Michigan should recommend men who they think were capable and not from the standpoint of politics.

DR. BURKE (Closing the discussion): There is apparently considerable difference of opinion as to just how far politics should enter into this question of dental laws.

An authority on this subject has recently given utterance to the following: "We all say politics ought to have nothing to do with dental laws, but when an American graduate wishes to practice in Russia, Austria, Italy or Spain, the first thing he has to do is to become a naturalized citizen. If an American does not adjust himself to the political conditions of the state, and the dental law is not acceptable to the dominant faction, it is a farce and fails in its mission, protection of the public from lack of enforcement."

A prominent Canadian dentist has said, "I am not sure that electing the board by the method in vogue in Ontario is much better than the method in vogue in Michigan. The province of Ontario is divided into seven districts, each one of which elects a member of the dental board. This board transacts all the business of the profession, and owns and manages the schools of dentistry, securing the professors, collecting the fees of students, etc., and the only objectionable feature of our system is the constant cry of the public against close professional cooperation. If it had the government stamp more definitely upon it this feature would be less pronounced. Of course, political appointments are always dangerous."

One, therefore, concludes from these statements that in order to be on the safe side we should see to it that politicians should not dominate in these matters, still dental laws should have the good will of both the profession and political power in order to make their enforcement as easy as possible.

Under the Pennsylvania law several state officers serve on the board, though the members of the board who conduct the examinations are all appointed by the governor, from a list prepared by the State Dental Society.

FORMULATE your creed today, but amend it,
or revise it entirely tomorrow. No belief is
good enough to arrest growth.

A METHOD OF REPAIRING A SHELL CROWN

By Dr. K. J. Luttropp, Boston, Mass.

In your October issue I read an article, "A Method of Repairing a Shell Crown," which seems to me to be a very roundabout way of doing it.

In removing a shell crown, I use a knife-edged rubber and carborundum stone, with which I split the crown, and in some cases I have to cut half-way across the occlusal surface. This method does not hurt the patient and you never need to break the tooth, as so often happens with the splitting pliers. I never try to remove a crown without so doing, unless it should be set in gutta-percha. Remove cement, cleanse in acid, reshape with pliers. Cut a narrow strip of 1000 platinum foil and place inside of crown under split, and where crown has been worn through. Some coarse asbestos is now picked up and forced into crown, holding platinum in place. Flux, heat and solder. This whole operation will take only a few minutes.

In cases where the gum has receded from the crown I remove the shell, the usual way, make a cylinder from 1000 platinum foil, fit the same inside of crown, press in place with asbestos, flux and flow 20 karat solder where it is indicated, and then trim with shears, boil in acid, finish and polish. Your crown is as good as ever and often fits a great deal snugger, especially if the original one has been too large, which is often the case.

ONE CAUSE OF MALOCCLUSION WE SHOULD NOT ALLOW

By R. W. Gaston, D. D. S., Gulfport, Miss.

The great tendency of the present time in dealing with any abnormal condition of the human body is toward the prevention of such condition. If we can cure or correct it after it has become established, we are doing well, but if we can prevent it becoming established, we are doing infinitely better.

In considering the treatment of any diseased or abnormal condition we first look for the cause of the trouble and, if we can successfully remove this, we have progressed a long way toward the relief of the condition. This is sometimes very difficult to accomplish, but when we find those cases of malocclusion which are caused almost entirely by the extraction of the first permanent molar it should teach us the necessity of using our very best efforts to save these most important teeth and thereby prevent such cases of malocclusion of the remaining teeth as we so often see.

These teeth are often neglected by the parents because they think that, as they erupt at such an early age, they are only temporary teeth and therefore do not place so much importance on the necessity of having them filled when cavities appear, consequently they are often in a very badly broken down condition when the dentist sees them, probably with exposed pulps or possibly abscessed. Because of their frail condition he hesitates

to undertake the necessary treatment of such teeth for a child so young, and with very little further thought the most important tooth in the mouth, the keystone to the arch, is lost.

We can correct the malocclusion of the remaining teeth so often caused by the loss of this molar. But nature has been seriously handicapped in her work of building the organs of mastication, through the loss of this tooth, and that at a most crucial period, a time when she is putting forth her best efforts, when the organs of the body should be most rapidly developing.

We should remember that the development of the body of the mandible is dependent greatly upon the stimulation and wedging force caused by the eruption of each succeeding molar—if we extract the first molar we deprive the mandible of this wedging force altogether until the second molar has migrated forward sufficiently to take its place in contact with the bicuspid. The development of the mandible from this source is practically at a standstill from the time of the extraction of the first molar to this time, and nature has spent her best efforts in building the entire system and is now preparing to rest, putting forth only such efforts as are necessary to keep the various organs in repair; hence the mandible goes through life without its full share of development.

THE RELATION OF ORTHODONTIA TO THE GENERAL PRACTITIONER *

By F. E. Williams, D. D. S., Grand Rapids, Mich.

THIS is a subject to which I have given much attention and study. It is a subject which has had limited discussion before the different dental societies of this and other states; a subject which has not been given the thought and discussion it demands, at least not along the lines relative to remedying the position of the specialist and general practitioner in regard to the correction of cases at a distance from the specialist. The patients generally can not meet the specialist in his own office on account of distance and the many and frequent trips there are necessary for the correction of the cases, besides the necessary fee connected with the case, and who, nevertheless, demand that treatment be given them, and look to the general practitioner for relief and treatment at his hands. It is true they mostly do not realize the treatment necessary to make a complete and lasting correction, but neither did they realize so much the necessity for the filling of decayed teeth before education became broadened along these lines, and they must of necessity look to us as dentists for the proper instruction and for the definite results. Then it is our duty in turn to place ourselves in position that they may receive the results required.

In a measure the patients have been told to wait till they were older, and in reality they should not wait, as I emphasized in my paper before

*Read before the Michigan Sixth District Dental Society, April, 1909.

the State Dental Association at Detroit, in 1906, but we should treat these cases earlier, and so prevent the mal-occlusion in its worst form. The treatment is easier for the patient, easier for us, and of shorter duration. These are plausible reasons for earlier treatment; as early as we are enabled to make the correction pronounced and complete. Now some excited theorists advocate the "prevention of mal-occlusion." The part theory plays is all right and, indeed, proper and necessary, but any theory that can not be applied or does not conform to reason, is necessarily an incomplete understanding of conditions and treatment necessary.

Now, we can not prevent mal-occlusion only as to the general education for the better and proper use of the teeth and the care of them (cleaning, filling and all proper treatment). We can, if we correct the case, prevent its getting any worse and place the patient in a normal condition, as regards the articulation of the teeth and the betterment of conditions in general, from the good effects therefrom; but as the causes of the irregularities of the teeth are mostly unseen, the effects and not the cause being visible, we are enabled only to correct the existing irregularities and enable a return to normal condition, and that brings us again to the question of "The Relation of Orthodontia to the General Practitioner" and how we are going to reach and treat these cases successfully, where it is impossible for them to come to our offices, as mentioned.

As a rule a dentist in general practice does not like to bother with such cases, and will not unless pressure is brought to bear upon him; then he will likely say he will do his best, but right here is the pinch: If his best is not sufficient to accomplish the good effects required, if it does not produce the right and lasting results, should he even start or try to make the correction? He must make some plausible excuse to the patient if he refuses to correct it. To say he is too busy and has not the time will not answer, and if he says it is not in his line, they do not see why he is not prepared to do anything in the line of dentistry; but the best argument is that they need the correction, and needing it, they ought to receive it and in a satisfactory manner—a complete correction. The work is almost entirely overlooked, as it is, as is all earlier treatment of children such as filling of the deciduous teeth, etc. This education should all come in together with the treatment and correction.

It is impossible perhaps for each dentist to prepare himself for the proper correction of these cases, but at least one dentist in each place should understand this work; should be able to make the correction and properly retain the teeth in place after its completion. And here let me say, that after the teeth are moved into correct occlusion, a weak and imperfect retention means a final failure in the correction of the case; hence, after the teeth are moved into perfect (not simply a good) occlusion, our retention must be likewise perfect, or the teeth will move back into practically their former position, from the tendency of the stretched dental fibers to contract in that direction, making it necessary for us to prevent that movement by extra tension on the retainers.

Now, as stated, these cases should be corrected completely and not put off or done in a somewhat indifferent manner merely to pacify the patient. Assuredly the results of the pressure are noticeable more in the front teeth, but, as stated, we must go back of that to remove the cause and in every case make a general correction of both the upper and lower arches.

Sending the models for appliances for the different cases helps some, of course, and we are all glad of consultation; it shows interest and with marked attention to the correction, some good results are accomplished in the simpler cases, but it is not enough and the cases corrected are only occasional; the field is then left as it was before. Again, simply putting the appliances on so they look well, and to get some movement, is not all that is necessary, for any one can put the appliances on and any one is able to simply move the teeth, but to put the appliances on properly and to get correct and steady movement in the proper direction, movement to normal articulation, is a different matter and requires something more than intuition to accomplish proper results. It means study; knowledge gained by experience; in fact, preparation as in other lines and should be given the same consideration.

Looking at the matter in the way I have tried to make plain, I believe it gives us sufficient grounds for discussion on a difficult subject. I believe it calls for a remedy which is a good deal of an open question as to its solution, but in my own city, I try to make it plain to the dentists not to overlook the field but give it the deep interest and serious consideration it deserves; and that if the patient objects to being transferred to my office (for many times they do not see why the correction can not be done in the office of the general practitioner), I make the examination, and am willing to make the correction there also, if enough cases are got together to make it an object; and the dentists may see and do the work in their offices with me. They will, in that way, take greater interest in the work and with, I believe, a greater degree of success.

I am operating in this way in Muskegon now and with much success. I have some patients from other outside cities, but as a rule they do not like to come the distance necessary. The work does not progress as fast as it does in my own office, for I do not see the patients over one-third as often, but that is immaterial as long as the outcome is successful. This method fills in the gap between the patients at a distance and the orthodontist and we are enabled to see more of the patients needing this work, and as long as I confine myself absolutely to orthodontia (which I do), the plan works smoothly. I believe this plan should be followed in every place of any size, and eventually will be, with one or more dentists in each place, or as many as may be interested, depending somewhat upon the size of the city. Any extra interest shown by the different dentists is broadening to the profession; any advancement of the profession as a whole means a step in advance for the individual dentist and so of interest to us all in general.

PRESIDENT'S ADDRESS*

By D. H. Ziegler, D. D. S., Cleveland, Ohio

IN compliance with a provision in our by-laws, the duty devolves upon me of presenting you with an address on this occasion. But, before I enter into it, I must first thank the society for the honor so conferred upon me, and I must also extend my thanks to the executive committee and all who take part in the program, for their zealous efforts to make this meeting a success. And I might remark in passing, it seems destined to be the most successful meeting in our society's history.

I am going to preach in this talk of mine—preach cooperation, a subject which may appeal to you as an old, a much bethumbed subject. The prisoner at the bar pleads guilty, and as prisoners sometimes do, files this exception. Hasn't cooperation proved itself a wonderful force in the perfection of our profession; hasn't it broadened and uplifted us to a realization of its indispensability? Why not, then, a sermon on cooperation; your clergyman never tires of exercising his prerogative of exhorting as often as he likes on the subject of hell's fires.

Cooperation is the concert of many for compassing advantages usually impossible to be reached by one, in order that its gain may be fairly shared by all concerned in its attainment. From the commencement of human society, cooperation has been common in the sense of two or more persons uniting to attain an end beyond the reach of the individual, the benefits of which he shares with the rest.

Adam's performance on that first Monday is probably the first bit of cooperation on record. He, it is unofficially related, left his couch early and kindled the washday fire; instead of going back to bed to await the boiling of the water, he went into the highways and byways and secured for himself and his better half extra suits of fig leaves. Thus he provided for the family a change of clothing. How else could Eve have washed the clothes? for she and Adam could not have lain in bed and left them to wash themselves in the stationary tub below stairs—left them to their own devices. Eve would have found it impossible to attain this end alone, this "end beyond the reach of the individual, the benefits of which he shares with the rest." Adam lent himself to the emergency. So there you have it—the first cooperation.

The value of cooperation in society work will be my preachment today. I find my particular text in the movement now on foot to incorporate all the local dental societies of the state into one body, for the individual and collective benefits it promises.

This society is a living, eloquent argument for cooperation. From its inception it has always been in the foremost rank in giving to the profession advanced ideas and advanced methods. Half a century ago, when the thirty-seven charter members laid the keel of our society's ship, fraternalism

*Read before the Northern Ohio Dental Association, June, 1909.

among dentists was almost unknown. They rarely met in a social way, to meet for the mutual exchange of theories and experiences was totally unheard of, and out of the question if it had been suggested.

From its birth in 1857, this Northern Ohio Dental Society has grown step by step, forging its way rapidly. First, the meetings were given over to discussions. One of the earliest was on the subject of Orthodontia, conducted at the second annual meeting. In 1865, we—I mean the first generation, the pioneers of us—took up the question: “What Means Have Been Found Most Successful in Arresting Decay?”

Next came the essayist. One of the first was Dr. Butler, who read a paper on “Contour Fillings” in 1869, in which he advocated ideas which are taught today. In 1873 Dr. Corydon Palmer exhibited and explained the use of his fine instruments which are made at the present time.

Our first clinic was held in 1878. It was then that we, in common with other societies, began to know our profession as it really is; began to appreciate the fact that it has an artistic side as well as a scientific. We had only theory before, now we have practice. Who now knows of a dental society meeting without its clinic? One would be an anomaly, like a cart without a horse. From the day of our first clinic to this, our clinical department has always been a strong factor in our growth and advancement. In a great measure it has become a post-graduate course for many of our society’s members. We have always endeavored to have all the newest ideas presented by the best men on the program, and I cannot now recall one instance of our failing.

Most of you know all this. It is history. I have reviewed it because I feel that we must not lose sight of it, that we must be up and making the history that is to come. There must be more cooperation, more mutual exchange of ideas, more mutual help. The local clubs which it is now proposed to band together in the one big state amalgamation, have made us doubly efficient. We are striving for greater things, for triple—quadruple—for efficiency beyond measure. We have made gigantic strides, but we are yet far from the seven-league boots of perfection.

You and I—and all of us—must put our shoulders to the wheel and do more to foster this growing spirit of cooperation—for the professional betterment of you and me, and all of us. How should we proceed? By turning out to such meetings as this; by lending both our presence and assistance toward making them successful. It is both a duty and an honor to all of us.

One cannot weigh society by its strength of numbers. Advanced work and new ideas it gives to its members and the profession at large must form our basis of judgment. Let us each get out and put forth a strenuous individual effort to cause every ethical dentist to realize the cardinal necessity of his attending society meetings, and of contributing to and aiding those meetings. Johnson, Goslee, Ottolengui, Guilford, Byram, Low and others have found time to strengthen the work of this society by their

presence. There are none of us but can emulate their good example.

In closing—I must close soon, lest some of you get to thinking yourselves in church and listening to a clergyman's sermon instead of one attempted by a simple layman, a dentist at that—I want to suggest some new departures in the society's methods and works, which, it has occurred to me, are well worth considering.

A standing committee should be appointed to investigate new methods and appliances and report the same to the society.

A permanent committee on resolutions should be established, so that every resolution could be shaped into proper form before it comes before the society, and thereby save a lot of useless discussion.

One of the progressive courses inaugurated in society work is the post-graduate work started by the Illinois Dental Society, a synopsis of which appeared in the January DENTAL SUMMARY. It strikes me that this is something well worth the attention of a dental society which proposes to continue to be a factor in dental education in the future.

REPORT ON THE PRESIDENT'S ADDRESS

Professional work is so complex that your committee has not been able, in the brief time given, to formulate any definite plan of procedure that promises helpful results, but would recommend the suggestions in the address to the consideration of your executive committee.

It goes without statement that the fundamental principle of all associations is mutual benefit. And this society is a living example of what may be accomplished by combined aim and effort to advance the art and science of dentistry as a whole, rather than the glorification of the individual in clinic or essay.

C. R. BUTLER,
H. F. HARVEY.

SILICATE CEMENTS

(Continued from page 872 November Summary.)

The following communications were received too late for insertion with the answers in NOVEMBER SUMMARY:

DR. EDWARD B. SPALDING, DETROIT, MICH.

1. How long have you been using Silicate Cements? Since Dec., 1908.
2. Do you consider them permanent? If properly manipulated.
3. What has been the cause of any failures you may have had with them? Lack of care in adapting to walls of cavity, thereby causing leakage and allowing foreign substances to come in contact before crystalization has taken place, thereby staining.
4. Have you noticed wall leakage about the fillings after they have been in for some time? Yes—see No. 3.
5. Do you use oxychloride or oxyphosphate of zinc as a cavity lining under the filling? No—unless very large cavity and then to protect pulp.
6. Have you examined those fillings which have been in for some time, to determine edge and surface conditions? With what result? After one year do not note any change except where I have failed to have filling flush with wall and then there is chipping at edge.

7. Are you successful in immediate contour restoration? If so, how do you do it? If not, how do you arrive at satisfactory surface finish? Always wait until well set then finish with strips and discs. Use celluloid matrix sometimes held in place by steel matrix or gutta percha.

8. In what per cent of fillings do you get discoloration? Very small, but think it always my own fault.

9. What is your method:

(a) Of cavity preparation? Enamel margins as near right angle as possible. Under cut necessary.

(b) Of manipulation of the material? Have followed Ascher's directions and demonstrations closely.

(c) Of finishing the filling? See No. 7.

Any additional information will be appreciated.

Have confined myself to Ascher's Enamel so what I have said refers to that material *only*. *Do not* consider silicate cements a good material for a careless operator.

DR. W. B. DUNNING, NEW YORK, N. Y.

1. How long have you been using Silicate Cements? About four years, or since Ascher's Enamel has been on the market.

2. Do you consider them permanent? Some fillings have lasted very well, but I doubt if they may be classed as permanent.

3. What has been the cause of any failures that you have had with them? Discolorations and leakage the most frequent causes. Dissolution occasionally from improper manipulation, or the accidental contact of moisture before setting.

4. Have you noticed wall leakage about the fillings after they have been in for some time? Yes, often.

5. Do you use oxychloride or oxyphosphate of zinc as a cavity lining under the filling? Oxyphosphate, but only in deep cavities as a pulp-protector.

6. Have you examined those fillings which have been in for some time, to determine edge and surface conditions? With what result? The surface is invariably rough or granular under the instrument. Have not tested edge strength, but have noted frequent chippings.

7. Are you successful in immediate contour restoration? If so, how do you do it? If not, how do you arrive at satisfactory surface finish? I have never been able to work at sufficient speed and certainty not to require strip and disk for finishing. I believe the burnished surface is ideal, but always find it necessary to polish edges.

8. In about what per cent of fillings do you get discoloration? I can simply say that I have had a discouraging number of discolored Ascher's fillings during the past year. I seem to have been more fortunate in the years before, though less skillful in its manipulation. I suspect some slight variation in the manufacture, or deterioration of the liquid.

9. What is your method: (a) Of cavity Preparation? (b) Of manipulation of material? (c) Of finishing the fillings?

CAVITY PREPARATION.

Cavities should be prepared with all the care used for the insertion of gold, but with a slight modification in form. While the cement has some adhesive quality, it is well always to depend only on a retentive shape, hence the usual undercuts, though rather shallow ones, should be made. The enamel margins should be beveled as little as possible consistent with the proper protection of the enamel rods. The nearer the cavity walls approach the perpendicular to the bottom of the cavity the better, as a feather-edge of cement must always be weak and liable to chip. In a deep-seated cavity where there is danger of injuring the pulp by the pressure necessary to insert this filling, a rigid floor should be made to cover the pulpal wall by flowing over it a good oxyphosphate, the dentin having been first rendered sterile and put in safe condition. While an exposed, or nearly exposed pulp may be strangulated under the pressure of packing the filling, I have seen no case, nor heard of an instance, in which there was evidence of chemical irritation caused by the contact of the filling with the dentin.

When the cavity has been perfected, it should be finally cleansed and dried with alcohol. Absolute dryness of the parts near the filling must then be maintained for at least twenty, preferably thirty minutes, and the application of the rubber dam is advised in all cases.

MANIPULATION.

The proper shade should of course be determined while the tooth is wet, by means of the shade guide, or trial mixes formed into points. The powder or powders to be blended are selected and placed on an agate slab, beside the proper amount of liquid. With an agate or bone spatula carry to the liquid a mass of the powder of about equal bulk. Mix with a light rapid motion, then add small quantities of the remaining powder—being sure that a given quantity is incorporated before taking the next—and continue this deft but thorough mixing in the most expeditious manner, not spreading it over a wide surface nor wasting time in scraping the slab. As the mix becomes thicker and finally tough and stiff, some pressure and a kind of patting motion is needed to work the mass into a uniform consistence in which no dry particles of powder remain. The average mix should be a little softer than warm gutta-percha, and it should be carried in pellets and packed rapidly and accurately into all parts of the cavity, great care being taken to get perfect adaptation at the margins and to condense the entire surface of the filling while it is still soft. This can best be done by means of ivory or tortoise-shell burnishers, supplemented by celluloid strips and disks, all lightly greased with vaselin. Surplus material may be trimmed away with keen blades. The ideal result is the perfectly condensed and burnished filling, so nicely finished at the margins as to require no grinding or further shaping. But as it demands almost infinite skill and dispatch

not to be caught by the setting, most fillings when set have to be trimmed and finished with disks and strips. In this way absolutely perfect margins may be obtained, and the high polish nearly restored by fine disks. After twenty-five minutes the filling should be quite hard, when all vaselin may be removed by alcohol, and hot paraffin or sandarac varnish spread over the filling and adjoining parts. If the filling is an approximal one, the dam may then be so stretched as to expose the rubber septum between the teeth; this is cut, and the dam removed.

A minimum amount of vaselin should be used on the instruments in finishing, and great care should be taken to prevent its being mixed into the filling, or getting between the filling and the cavity margins. Of course, all instruments used for packing must be absolutely clean and free from the slightest trace of grease.

Tortoise-shell points are now made for packing the cement, and are suited for large accessible cavities. I confess that I have encountered no bad results in using polished steel pluggers, though their use is tabooed by the manufacturers.

“PROPHYLAXIS FROM A PATIENT’S POINT OF VIEW”*

By Mr. Edward Younger, Attorney-at-Law, Cleveland, Ohio

I AM happy to have been termed a patient, rather than a layman, for the purpose of this discussion, for I don’t feel that I *am* a layman. It is true, I know little or nothing about dentistry, but I do know a great deal about dentists. The earliest incident of my practice of law was associated with a fruitless attempt on my part to collect an account from a member of your profession, one who with that exquisite modesty so prevalent among quacks, had styled himself “The Universal Dentists.” He was an old fellow of some fifty years, his head as innocent of hair as a new laid egg and his conscience wholly devoid of ethics or morality. Here was a hard nut to crack and something like the following conversation took place between us:

“Doc, you owe my man \$40.00, don’t you?”

“Yep.”

“Well, why don’t you pay it?”

“I can’t, Younger, but I’ll tell you a story to show you how I’m fixed. A tramp one day called on a physician and said, ‘Doc, look me over. I need a thorough examination.’ ‘Very well,’ said the doctor, ‘I’ll examine you for ten dollars.’ ‘All right, Doc, go ahead, and if you find the ten I’ll split it with you!’ Now, that’s the way I’m fixed, Younger. You go ahead and find that forty and when you get it I’ll split it with you.”

I don’t know whether I should have any better luck trying to collect bills from the members of this society, but I am well satisfied that it would be no difficult matter for me to borrow money from any of you, for I never

*Read before the Michigan State Dental Society, June, 1909.

have met a more liberal and hospitable lot of people anywhere. Your convention seems to be actuated by a rare spirit of good fellowship. Whether here altogether assembled or divided into numerous coteries of choice spirits, there seems to be rather a fraternal feeling among you as noticeable as that which obtains among members of organizations dedicated to fraternity. The older fellows are older simply in years, not in spirit, and the younger of your members seem freely to draw upon their seniors for that counsel and wise direction which experience alone can give. I wish most heartily that among the lawyers this comradeship were found conspicuous to a like degree.

All this that I have said has mighty little connection with the proper subject of my remarks, but I feel so enthusiastic about this unlooked for spirit of kindly fellowship which seems to pervade your deliberations, that before I pull my real speech out of my pocket and get down to business, I want to tell a story which will point you its own moral.

At the Gridiron Club in Washington a number of years ago, three men were summoned to answer to the same toast, "Our Country." The first was a captain of the army, and when he arose he said: "Our Country! Bounded on the north by Canada, on the south by Mexico, on the east by the Atlantic and on the west by the Pacific,—a pretty fair sized country." A captain of the navy was then called. His vocation had taken him over the entire world; his horizon was broader; he saw things in a bigger way; and so he said: "Our Country! Bounded on the north by the North Pole, on the south by the South Pole, on the east by the rising sun, and on the west by the setting sun,—a mighty sight bigger country." Then the simple enthusiastic patriot was called on. No one could see how he was going to bound the nation in any broader, more comprehensive or fanciful way than the sailor had done, but this is what he said: "Our Country! Bounded on the north by the aurora borealis, on the south by the 'procession of equinoxes,' on the east by primordial chaos, and on the west by the day of judgment,—and that's going some."

Now, my friends, if the dentist wants to bound himself and his activities within the narrow limits of his own town, if he wants to depend upon his own slender resources of skill and thought, there he will stay a little fellow doing little things until he dies; but if he wants to look beyond himself and his little town and bound his activities and resources by larger limitations, joining hands with the fellows in the next town, and the next and the next until at last the profession in the whole state has become allied and unified for progress, then and then only will the individual dentist and the profession of dentistry advance steadily onward and upward to higher and more dignified planes.

Your gatherings from year to year are, as I suppose, in the nature of clearing houses for professional ideas where the thought and experience of each are given freely for the benefit of all. If I, as a lay visitor from a neighboring state, may serve in any degree, however slight, to add to the

sum total of advantage to be gained here, then the invitation which brings me will not prove wholly unfruitful.

In casting about for a framework upon which to shape these remarks, I consulted a wide range of authorities from popular encyclopedias to the brain storms of after dinner oratory, and it was astonishing, Mr. President, to find how very few and meager are the references to dentistry and its specializations.

The profession seems to be in its merest infancy with the future all before it. It is well known indeed that in the remotest antiquity the people of Egypt, whose patient labor built the pyramids, stone on stone, had also a certain genius in the practice of crude dentistry. Specimens of work in the shape of natural teeth bound together with gold, or artificial teeth of ivory, bone, wood or stone attached to the natural ones by means of cord or gold or silver bands or ligatures, have been found in the jaws of mummies of a period centuries before Christ.

But in the black pall of the thousand years of darkness which obscured the light of civilization and progress, all knowledge of dental science was lost and forgotten. As a distinct profession, the modern science has its origin within the last century, and our own country is chiefly creditable among the nations for the advances the profession has made.

The time is not so long distant as to be beyond the recollection of your oldest member when it was perfectly lawful and customary for the barber or blacksmith to perform the operation of extraction and receive a fee for the service; or for the jeweler or silversmith to make artificial dentures. In 1766 your earliest American prototype hung out his shingle. In 1820 there were just an even hundred of you. In 1872 the respectable number of five thousand had been reached. In 1902, 28,000, and it may well be that in this year of grace, 1909, there are 40,000 knights of the forceps, pulling away with a long pull, a strong pull and a pull altogether, or plugging along in your game of dental golf from one hole to another.

Your first professional publication appeared in 1839, and in the next year the American Society of Dental Surgeons, your first college in all the world, was organized. There are now sixty such institutions, but if the profession in this country were doubled tomorrow, the schools trebled, the number of graduates each year multiplied by four, ten years wouldn't produce enough dentists to rectify the conditions present in the mouth of humanity. This last statement, gentlemen, I quote literally from a report by the Dental Society of Cleveland upon its examination of the school children of that city, recently conducted. Twenty-seven hundred children were examined, 100 mouths were found perfect, 2,600 defective, 40% only were familiar with the tooth brush and 16,000 cavities were discovered.

Civilization has been responsible for this condition and it must be held accountable to provide the remedy. The red man roaming the primeval forests of America was a stranger to mal-occlusion, cavities, toothache and

decay until the transfusion of white blood corrupted his constitution and visited upon him the dental ills our flesh is heir to. The negro in slavery days was blessed with a set of teeth even more sound, gleaming and conspicuous than those which mark the caricatures of King Teddy; but the mouth of the black man of today, after forty years of intermingling with the whites and adoption of their habits has paid the penalty of freedom. The mushy pre-digested food which forms so large a part of our diet, our habits of bolting food without proper mastication, the strong acid drinks, hot and cold, which we so freely imbibe, and the laziness we feel in matters of mouth cleanliness,—all these things and others have conspired to infest the tissues of the mouth with poison and attack the gums and teeth by the destructive organisms of disease and decay.

To rectify all this, your procedure would seem to be not more by way of remedying the defects present in this generation, than by prevention of their recurrence in the next. An ounce of prevention is worth a pound of cure. A stitch in time saves nine. And these time-worn maxims are merely homespun equivalents of the high sounding term prophylaxis,—the science of removing causes so as to prevent effects.

The prerequisite to all successful treatment along lines prophylactic would seem to be to educate the profession at large and the people to the necessity for cleanliness. If cleanliness is in truth next to godliness, there are millions of patients and thousands of dentists who are far from being next. To take the growing jaw of the young child and shape it to proper form, to educate him into the habitual use of brush and powder, to submit his mouth to frequent inspection and nip its diseases in the bud. These, all these, will take years of educational endeavor on your part; but it will be done and will result in saving of teeth and health and so of life itself. I quote from a special article on the subject when I say that the leaders of your profession concede that your highest attainment for the future will be to awaken the people to proper understanding of the necessity of caring for the teeth and mouth; starting with the erupting gums of childhood.

The Cleveland Dental Society intends to establish a clinic in connection with two or three schools to demonstrate how much better the youngsters can do if their mouths are put right and kept right. In New York City two young dentists have arranged to give free treatment to school children at certain hours of the day, and naturally enough their work is spreading rapidly.

The child is father to the man; and it is a hardship for some of us to start manhood with the teeth bequeathed us by our childhood. In my own case there is mal-occlusion and plenty of it, and I blame my parents for that, and the numbskull dentists who knew just enough to pull my teeth when they ached. The blacksmith of fifty years ago could do that. But there is none such here. The professional man, be he lawyer, doctor or dentist, who attends conventions is not asleep at the switch. He is fully alive to the responsibilities which the advancement of learning puts upon

him. It is, generally speaking, the fellow who sits at home who conducts his practice with the books and instruments of the last century and works upon the motto, "That old ideas are good enough for him." They may indeed be. Anything may be good enough for such as he, but as he stands still the procession keeps moving on and pretty soon leaves him sitting alone on the milestone of dead yesterday.

Until a year ago I called on a dentist only when nature was crying for relief from pain, or my teeth were so stained by tobacco and foreign deposits as to reflect shame from the looking-glass. It is different now. I visit a specialist religiously once a month.

You may all have heard the story of the farmer congressman who took lodging at a fashionable hotel in Washington. In writing home after a few weeks of it, he said to his wife, "Jenny, this hotel is surely great with its thick carpets and brass beds and electric lights; the bathroom is floored with tile, there is hot and cold running water all the time, and the porcelain tub looks so cool and nice, that I can hardly wait for Saturday night to come." I feel the same about my appointment with the specialist, for when I go to him my teeth and gums feel sticky to the tongue and there is a dark brown taste from sitting in crowded prayer meetings; but when I come away the tongue slides freely over the white and shining surfaces, the interdental spaces are free from decaying substances, the whole mouth has lost the noxious tastes and odors of a month's accumulation; and I feel that the gateway to the alimentary tract is absolutely clean. Isn't it worth while? It makes my mouth happy, increases my self-respect and makes me unafraid to look a mirror in the face.

Prophylaxis is marching on. Thinking men know it is easier to prevent evil than to correct it. Jenner invented vaccination to accomplish immunity from smallpox; the first business of Uncle Sam on the canal isthmus was to drain the marshes and expel the yellow fever mosquitoes. The annual strengthening of the world's navies is done upon the doctrine that, "To prevent war, be prepared for it." The lawyer wins his broadest reputation and richest fees by keeping his client's interests free from the embarrassments of litigation. These instances and innumerable more all exemplify the universal application of scientific prophylaxis. And your profession so recent of birth, so young in experience, and presenting to your choice so many new branches for special cultivation, would seem to offer few indeed more thoroughly in line with modern thought or more greatly calculated to accomplish good than this same science of prevention.

"By the loss of the nail the shoe was lost,
By the loss of the shoe the horse was lost,
By the loss of the horse the rider was lost,
By the loss of the rider the battle was lost,
And all for the loss of a horse shoe nail."

Supply the nail, that's prophylaxis!

EDITORIAL

HUMAN JAWS AND TEETH AS ORNAMENTS

IN a recent report of findings in a group of mounds, in Ross County, O., that were explored within the past few years, some interesting information is given.

It is conceded by scientific men that the builders of this mound were representatives of the highest culture of the aboriginal man found in Ohio.

The articles taken from the burials were most interesting as to quantity and quality and represent the highest art of prehistoric man in Ohio.



Fig. 1

From the 133 burials, upwards of 12,000 specimens, including implements and ornaments of copper, shell, bone, teeth, and stone, were removed. The artifacts were made into various forms of implements and ornaments. Ornaments of bone were frequently found in the burials in perfect condition, though many had been destroyed by cremations, so that their identity could not be determined. Those that could be identified consisted of gorgets, carved bone, bear teeth, shark's teeth, and ornaments made from animal and human jaws.

The most interesting of these ornaments were the human jaws.

The lower jaw was usually selected, but occasionally the upper was detached, perforated and used for ornament.

In one of the burials the cremated remains were placed in the grave together with implements and ornaments. The implements consisted of two arrow points and the ornaments consisted of two copper ear pendants and a human inferior maxillary bone.

This jaw, when taken from the grave, was considered perfect, but upon examination it was found to be an adult jaw with three incisor teeth gone. The loss had been replaced by three incisor teeth of the deer. Deer teeth

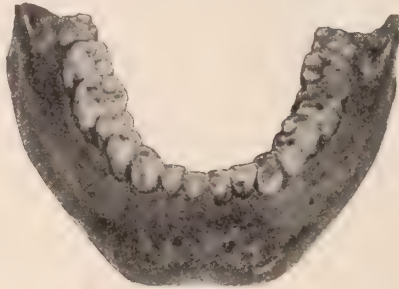


Fig. 2

have very long roots, but these were cut and properly fitted into the sockets in the human jaw to replace the lost human teeth and make the ornament appear perfect, as only jaws with no teeth missing were used for ornaments.

We are enabled to show this jaw in Fig. 1.

Different parts of the jaw showed polishing and cutting. The symphysis was cut, and some work in polishing done.

The sigmoid notch also showed, by notches cut into the bone near the neck, that the ornament was attached at this point. The coronoid process

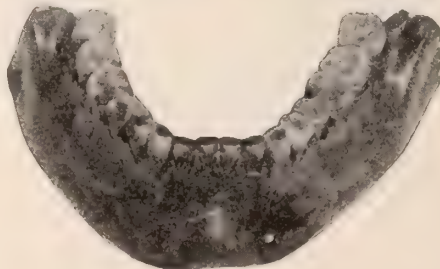


Fig. 3

was also slightly polished, and parts of the body of the jaw showed polishing and cutting.

Figs. 2 and 3 show two jaws taken from an uncremated grave. The jaws are those of adults, and the rami of both jaws are entirely broken away, leaving only the body of the jaw with the teeth inserted. Two holes, one on either side of the symphysis perforate the jaw, and were, no doubt, used for attachment.

Another interesting ornament is shown in Fig. 4, which was made of the upper jaw, by cutting away the bone from the skull above the alveolar

process and leaving the palate intact. The jaw is complete with the exception of the last molar on either side, which has been cut away.

The attachment was apparently made through the posterior palatine canal which had been enlarged by boring.

Not only were human jaws utilized for ornament, but those of the mountain lion, wild cat, and bear were frequently met with.

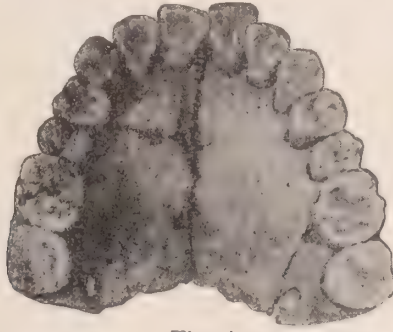


Fig. 4

Ornaments were also made of the canine teeth, of the bear (perforated) and from perforated teeth of the shark, and necklaces made from the canine teeth of the raccoon and opossum were abundant.

Ornaments, such as we have described, were evidently highly prized as they occurred quite frequently in the graves of these prehistoric people, commonly known as the "mound builders."

THE MAN WHO SUCCEEDS

Many people are like the old woman's clock, of which she said as long as it wasn't running it was sure to be right at least once in twelve hours, while if she started it going it might never be right.

We may be right once in a while by standing still, but it is no credit to us. The successes in life are those who make a run for it and risk the chance of running right. The failures are those who allow trivialities to stop them.

Success in life is greatly a matter of attitude. If we think success steadily and consistently, it is bound to be ours.

There is no magnet like that of fixed thought. We must rise to it in spite of any conditions. No man ever became a millionaire by thinking in pennies; none ever became a high-class mechanic by thinking only the primitive laws of physics. No real artist but thinks a great picture before he can paint it. Nor sculptor who does not see the whitened image before his chisel strikes the cold stone slab.

The unsuccessful person is he who says: "The way is dark; mountains are to be climbed, and no path is made; rivers to be crossed, and no bridges; forests to be threaded, and no road. No, I will not risk the journey. I am safe where I am."

The successful one says: "The way looks dark, but I know I can see at least one step at a time; mountains are to be climbed, but I shall make a path; rivers are to be crossed, but I can build either raft or bridge; forests are to be traversed, but I shall blaze a trail. As I go I shall learn ways of overcoming these difficulties that are not now known to me. Anyway, I will try."

These two kinds of mind mark the dividing line between the successful and the unsuccessful. The one fails in advance through his fears. The successful man's only fear is of the future made futile by lack of timely endeavor.

There are more ways than one of standing still. We may be keeping the hands occupied, without being alert for mental progress. We may continue doing things in the old out-of-date way, not noting that others are constantly adopting improved methods. We may be toiling and moiling in continuous failure, without realizing that ignorance is a fatal drawback.

In these days the man who would be on the move must be so mentally as well as physically. The mind must shape achievement before the hands can accomplish it.

The time to be on the move is today—for tomorrow, they say, never comes.

If you would see a picture of your future you must look for it in your present.

If you would gaze on the star of your destiny you must look for it in your own thought.

DENTAL SOCIETY CRITICS

How often in conventions or society meetings we hear words mispronounced, and are sometimes at a loss ourselves as to the correct pronunciation. In order to correct this faulty practice a few dental societies have appointed critics for their meetings. As an example, the Cleveland Dental Society appointed a critic in 1898 and found it so advantageous that the custom has been in vogue ever since. Dr. H. L. Ambler, who has been critic for the past seven years, says that he reports only on pronunciation and application of technical terms, not naming those who made mistakes. He reports at each succeeding meeting what was missed at the previous meeting.

At a recent session the critic, Dr. Ambler, was requested to prepare a list of the most commonly mispronounced words, the society voting to adopt as authority the report of the committee on nomenclature made to the American Dental Association (now National) and the Standard dictionary, when a word was not found in their report.

The list prepared comprises about one hundred words. That our readers may have the benefit of this work we reproduce the list as printed:

Word	Pronunciation	Word	Pronunciation
Adenoid.....	ad ¹ -e-noid	Incisal.....	in-size ¹ -al
Alloy.....	al-loi ¹	Iridium.....	i-rid ¹ -i-um
Aluminum.....	a-lu ¹ -mi-num	Incisive.....	in-size ¹ -iv
Alveolar.....	al-ve ¹ -o-lar	Iodid.....	i ¹ -o-did
Alveolus.....	al-ve ¹ -o-lus	Iodin.....	i ¹ -o-din
Anesthetic.....	an-es-thet ¹ -ik	Iodoform.....	i-od ¹ -o-form
Anesthetizer.....	an-es ¹ -the-tizer		
Anesthetized.....	an-es ¹ -the-tized		
Anemia.....	an-e ¹ -mia		
Anomaly.....	a-nom ¹ -a-li	Kaolin.....	ka ¹ -o-lin
Apex (Plural Ap ¹ -ices).....	a ¹ -peks		
Apical.....	ap ¹ -i-kal	Lever.....	tev ¹ -er
Apparatus.....	ap-pa-ra ¹ -tus		
Asepsis.....	a-sep ¹ -sis	Mesial.....	mes ¹ -i-al
Aseptic.....	a-sep ¹ -tik	Mesially.....	mes ¹ -i-äl-lī
Arsenous.....	ar ¹ -se-nus	Matrix.....	mā ¹ -triks
Abdomen.....	ab-do ¹ -men	Matrices.....	mat ¹ -ri-seez
Abutment.....	ah ¹ -but-ment	Maxilla.....	mak-sil ¹ -a
Analgesia.....	an-al-ge ¹ -sia	Maxillary.....	mak ¹ -si-la-re
		Masseter.....	mass ¹ -e-ter
		Melancholia.....	mel-an-cho ¹ -lia
		Mold.....	mold
Bifurcated.....	bi-fur ¹ -ka-ted		
Bifurcation.....	bi-fur-ka ¹ -shun	Nomenclature.....	no ¹ -men-kla ¹ -ture
		Nascent.....	nas ¹ -sent
Caoutchouc.....	ko ¹ -tchōök		
Caries.....	ka ¹ -ri-es	Occlusal.....	ok-klu ¹ -sal
Carious.....	ka ¹ -re-us	Occlusion.....	ok-klu ¹ -zhun
Cement.....	se-ment ¹	Oxid.....	ox ¹ -id
Cervical.....	ser ¹ -vi-kal		
Contour.....	kon-toor ¹	Porcelain.....	pors ¹ -lain
Coronal.....	kor ¹ -o-nal	Process.....	pros ¹ -ess
Chlorid.....	klo ¹ -rid	Prosthesis.....	pros ¹ -the-sis
Conjunctiva.....	kon-junk-ti ¹ -vah	Prosthetic.....	pros-thet ¹ -ik
Cocain.....	ko-ka ¹ -in	Proximal.....	proks ¹ -i-mal
		Proteid.....	pro ¹ -te-id
Dental.....	den ¹ -tal	Program.....	pro ¹ -gram
Dentin.....	den ¹ -tin	Presentation.....	pres ¹ -en-ta-tion
Dentinal.....	den ¹ -ti-nal	Prophylaxis.....	pro-fy-lax ¹ -is
Denture.....	den ¹ -ture	Pathology.....	path-ol ¹ -ogy
Data.....	dā-ta	Peroxid.....	per-ox ¹ -id
Detail.....	de-tail ¹	Proximate.....	prox ¹ -i-mat
Edentulous.....	e-den ¹ -tu-lus	Profile.....	prō-fil
Erosion.....	e-ro ¹ -zhun		
Exostosis.....	ex-os-to ¹ -sis	Resorption.....	re-sorp ¹ -shun
		Rugae.....	ru ¹ -jee
Ferrule.....	fer ¹ -rel	Rational.....	rash ¹ -un-al
Festoon.....	fes-toon ¹		
Foramen.....	for-a ¹ -men	Solder.....	sod ¹ -er
Foramina.....	for-am ¹ -i-na	Sulcate.....	sul ¹ -kate
Forehead.....	for ¹ -ed	Sulcus (Plural sul ¹ -si).....	sul ¹ -kus
		Swage.....	swaj
Gage.....	gaje	Status.....	stā ¹ -tus
Gingivae.....	jin-jī ¹ -vay	Sulphid.....	sul ¹ -fid
Gingival.....	jin-jī ¹ -val	Syringe.....	svr ¹ -inge
Gingivally.....	jin-jī ¹ -val-ly	Situ.....	si ¹ -tu
		Stomach.....	stom ¹ -ak
Hydrofluoric.....	hai ¹ -dro-flu-or ¹ -ic	Sequela.....	se-que ¹ -la
Hypercementosis.....	hy-per-se-men-to ¹ -sis		
Homogeneous.....	ho-mo-je ¹ -ne-us	Technic.....	tek ¹ -nik
Hygiene.....	hy-jene ¹	Tortuous.....	tor ¹ -tu-us
Hemaglobin.....	hem-a-glo ¹ -bin	Terebene.....	ter ¹ -e-bene

HOW TO DISCONTINUE A JOURNAL

You have an undoubted right to stop a journal when you feel disposed, upon payment of all arrearages. Do not hesitate to do so on account of tenderness for the editor.

When you discontinue a journal, do so manfully; don't throw it back to the postmaster and say: "I don't want it any longer!" and have "Refused" written on the cover, and the journal returned to the publishers.

No considerate man ever stopped his journal in that way, no matter if his head is covered with gray hairs, which should be honorable.

If you no longer wish to receive a journal, write a note to the publishers, like a man, saying so; and be sure that arrearages are all paid.

This is published as a guide to the reader when he wishes to discontinue other journals; of course no one will want to discontinue THE DENTAL SUMMARY.

THE CLOSING VOLUME

Another year is drawing to a close and soon we will all of us be striking a balance to ascertain what real benefits we have derived during the twelve months. And in doing this we trust that our readers will not neglect to go over their files of THE DENTAL SUMMARY to impress upon their minds how much of value they have gleaned from its pages that has aided them in their practice during the year.

A year ago we promised our readers a helpful magazine and that promise has been fulfilled.

Some of our friends said we had "struck too swift a pace," and would not be able to keep it up. Of this we leave the reader to judge.

Now we turn our attention to the new volume for another year. New features are being added, which will be duly announced, and reading matter of special value is being provided. We expect to make the coming volume better than any yet published and our readers can aid us in this by sending descriptions of practical methods and useful suggestions to the editor, for we want everything helpful for our readers.

In closing the volume for the year we desire to thank all those who have aided in making THE SUMMARY beneficial by contributing to its pages, and to extend to one and all the season's greetings with best wishes for a pleasant and successful new year.

NEW PUBLICATIONS

DENTAL MATERIA MEDICA AND THERAPEUTICS.—With special reference to the rational application of remedial measures to dental diseases. A text book for students and practitioners. By Herman Frinz, M. D., D. D. S., Professor of Materia Medica, Therapeutics and Pathology. Washington University Dental School, St. Louis; Chairman Committee of Revision United States Pharmacopeia, Department of Stomatology. American Medical Association. Illustrated; price \$5.00. St. Louis, The C. V. Mosby Medical Book & Publishing Co.

An attractively printed publication of nearly 600 pages, 6 x 9, large, clear type, on white paper without glaze. Guided by extensive class-room experience and clinical practice, the author points out the method by which pharmacologic research and clinical observation may be advantageously combined in the rational use of remedial agents for the favorable influencing of pathological conditions.

Part I is devoted to General Therapeutics. Following a comprehensive introduction, space is devoted to a consideration of the Aim of Therapeutics, Action of Drugs, Classification of Dental Remedies, Selection of the Remedy, Methods of Administering, Prescription Writing, Incompatibilities, Weights and Measures, etc.

Part II deals with drugs that exercise no definite action on specific organs, drugs which do act in a specific manner, Organo Therapy and Serum Therapy.

Part III covers the field of Physical Therapeutics.

Part IV takes up the interesting problem of local anesthesia.

In part I the author has given concisely much information on the subjects treated. For instance, in Prescription writing, aside from general instructions he explains about dosage, showing why some people require smaller doses than others, what drugs are borne well by children and those to which they are peculiarly susceptible. He explains how to estimate the quantity of each ingredient entering into a compound prescription, presents a good exposition of incompatibility of drugs, a useful percentage solution table and short rule for determining percentages in mixtures, a valuable table of solubility, etc.

We have mentioned these things to show the reader with what thoughtful care the book has been prepared.

The subject of pharmaco-therapeutics covers about 325 pages. The same care has been exercised in the preparation of this portion of the book as in the first part.

Under the head of Antiseptics is treated, salts of the heavy metals, oxides and organic compounds; acids, alkalies, halogens and their derivatives; solutions which evolve nascent oxygen; antiseptics of the aromatic series; antiseptics of the marshgas series; essential oils, their derivatives, synthetic substitutes, etc. In this department the author also considers at length such subjects as Astringents; Caustics; Hemostatics and Styp-tics; Protectives, demulcents and emollients; Irritants and counterirritants; Antacids; Bleaching agents; Preparatives for the mouth and teeth; Local anesthetics and obtundents; General anesthetics; Hypnotics; Anodynes; Sedatives; Cerebral stimulants; Stomachics and digestives; Emetics; Cathartics; Circulatory and Respiratory Stimulants and Depressants; Tonics; Alteratives; Diaphoretics; Diuretics; Uric acid solvents; Antipyretics; etc.

Organo and serum therapy are considered and a good chapter on Physical therapeutics. Then follows a most excellent chapter on Local Anesthetics, physiological action, technic of injection, etc.

The appendix comprises diagnosis of diseases of the pulp by electric current, urine analysis, treatment of acute poisoning, glossary of therapeutic terms, diagnostic aids, thermometric equivalents and dose table.

The subjects have been admirably treated and worked out in detail special attention having been given to the practical application of those drugs found most useful to the dentist.

It appeals to the writer as the most complete work on this subject yet given to the dental profession and we are sorry that our limited space prevents a more extended exposition.

The book is well printed and bound and contains more than 100 illustrations.

It deserves an immediate and large sale.

A HISTORY OF DENTISTRY.—From the Most Ancient Times until the End of the XVIII. Century. By Dr. Vincenzo Guerini, Cav. Off. Surgeon-Dentist, Naples, Italy, Dentist to the Royal House, Doctor of Dental Surgery *ad honorem* of the Chicago College of Dental Surgery, etc., etc. Large octavo, 355 pages, with 104 engravings and 20 full page plates. *De Luxe*, cloth, \$6.00, *net*. Lea & Febiger, Publishers, Philadelphia and New York, 1909.

When one sees what an amount of material has been gathered from the oldest works and records, many of which had to be translated, he is not surprised that the author spent many years in compiling this work.

The author says: "The first beginnings of dental art were undoubtedly the same as those of general medicine, for it is evident that in primitive times, when the healing art was still in its rudimentary stage, no divisions could have existed in it."

In speaking of dental art among the Egyptians, he says: "Our knowledge of medicine as practiced among the Egyptians of old is now no longer limited to the scanty notices handed down to us by Greek and Roman writers. The researches made by students of Egyptian lore have placed original medical writings in our hands, now already partly interpreted, that permit us to form a sufficiently exact idea of the science of medicine in ancient Egypt. These valuable documents, denominated papyri, now exist in great numbers, * * * but the most important of the papyri treating of medical subjects is certainly the papyrus of Ebers, in the Leipzig University. This valuable papyrus—the most ancient of all known works on medicine—is the best written of all the Egyptian medical papyri, etc."

This papyrus is supposed to have been written toward the year 1550 B. C., but it is believed that some parts of it go back to 3700 B. C. Dr. Guerini says: "Dental and gingival maladies are in no way neglected in the Ebers papyrus. At page 72, a remedy is prescribed 'against the throbbing of the *bennut* blister in the teeth,' then two other remedies 'to cure the bennut blisters in the teeth and to strengthen the flesh' (gum)."

He says no mention is made of dental operations, not even of extraction, so we have reason to expect that at that remote epoch no surgical operation was carried out on the teeth and as yet no instruments existed for practicing extraction.

It is not known just when dentistry was taken up as a specialty but the author has been able to show dental appliances of the Phœnicians, Greeks, Etruscans and Romans.

The book is fascinating; it reads like a story. The author has divided the work into three periods:

Part I. First Period. Antiquity contains a treatise on dental art among the Egyptians; the Hebrews; the Chinese. Customs relating to the teeth among different primitive peoples. The Greeks; Dental Art among the Etruscans and the Romans.

Part II deals with the middle ages. The Arabians; and thirteenth to fifteenth centuries.

Part III deals with modern times, the sixteenth, seventeenth and eighteenth centuries.

In presenting this book to the profession Dr. Guerini has given dentistry the most complete record of its development in existence. Eminent as a Royal dentist of Italy and combining with historical aptitude the advantage of location in a centre of the ancient and modern world, has enabled him to produce a work otherwise unattainable.

Fortunately for Americans, Dr. Guerini kindly gave the National Dental Association privilege of publishing an English translation of his book.

Referring to this in the Introduction the Chairman of the Committee on History N. D. Association, says: "At the Buffalo meeting of the Association the Committee was able to report that Dr. Vincenzo Guerini, of Naples, Italy, has written a history of dentistry from the earliest times to the beginning of the 19th century, and that this work, translated into English and fully revised, had been generously placed in the hands of the committee for publication under the auspices of the National Dental Association, in token of the distinguished author's appreciation of American dental development."

It is a great work and every dentist who values the ancient lineage of his profession and who cares to trace its development may well be interested in it.

ELEMENTS OF ORTHODONTIA.—A Laboratory Notebook for Students and Beginners, by B. E. Lischer, D. M. D., Professor of Orthodontia, Washington University Dental School. St. Louis: The C. V. Mosby Company, 1909.

This book comprises a series of exercises in orthodontia technology which are of especial value to the student or beginner.

It is divided into three parts, viz.: the construction of models, exercises in the application of appliances, and the construction of retention appliances. Rules for soldering are given, then rules for model making. Next the construction of models (illustrated), construction of bands, without and with spur and other attachments, then the construction of various forms of retainers. There are thirty exercises, all illustrated appropriately, and blank pages distributed through the book for additional notes.

It is concise, unique and useful to those who desire to know something of the technique of orthodontic procedures.

WRITING FOR THE PRESS.—A Manual by Robert Luce—Fifth Edition—re-written.

This book of some three hundred pages contains a fund of information for anyone interested in this subject. To give the reader a better idea of its contents we will quote the titles of some of the subjects considered: Printer's copy; composition; some grammatical questions; errors in arrangement; mixed metaphors; words and phrases; discriminations; slang or idiom; obnoxious words; trite or grandiloquent; condensation; fine writing; the use of titles; some matters of law; the law of libel; some matters ecclesiastical and medical; aggregations of units; spelling; abbreviations; punctuation; proof-reading; hand writing; typewriting; newspaper writing; writing in general; illustrations; book manuscript; book making and publishing; copyright; paper; topography; index of words and topics, simplified spellings and glossary.

The book can be obtained from the publishers.

CORRESPONDENCE

PROPAGANDISM OF DENTAL EDUCATION IN OUR SCHOOLS

Editor of The Dental Summary—Among the many good subjects announced in the September number of the SUMMARY, to appear in the October issue, I noticed one in which I am especially interested: "Propagandism of Dental Education in Our Schools," by one Dr. F. H. Wittenbrook. The title, of itself, would have been sufficient to excite my curiosity, as it is, you will admit, an unusual one, and it seemed a peculiar coincidence, indeed, that another person of literary attainments should have a like title for his production as myself. The October number was duly received, the above titled article read and immediately recognized as being the one and the same read by myself over two years ago. True, our new literary star has, by way of introduction, and at the ending, used a few lines to which I lay no claim, but the part intervening, some five and a half pages (the whole article being about six pages), word for word, sentence after sentence, paragraph after paragraph, without even so much as a change in punctuation, was a true copy of my original work, which I presented before the Michigan State Dental Society at Saginaw, Michigan, June the 6th, 1907. The fact seemed too plain to require any further light; yet, out of courtesy to Dr. Wittenbrook, I addressed him and his reply to you by way of "AN EXPLANATION" (published in November issue) is indeed a work of genius, of a diplomat of no small proportions.

I wish to add just a few remarks in further explanation and in justice to the Allen County (Ohio) Dental Society, before whose meeting in April last my article was re-read by its new-born author. Dr. W. (for short) says very gracefully that the article in question was not entirely original with him. I beg to correct this by saying that none of it was original (with perhaps the exception of a few lines alluded to by me at the beginning of this letter). Dr. W. further states that in searching literature for his article (?), he made use of material whose authorship he did not know. This reminds me of the man who, when confronted by the police judge for taking a bicycle, pleaded for release on the ground that he did not know whose it was. Of course this work that he copied he came across in some worn volume of "Robinson Crusoe," but that is neither here nor there,—it is immaterial where he found it, even be it in his waste basket,—did he not know it was not his? He certainly did know this one fact and he should have stated so when he submitted the article for publication, even if he had

not mentioned the fact to the society before whom he posed as its original author. I cannot under the common order of things not holy, comprehend how he managed not to notice the author's name since it appears under the title in every publication in which the article re-appeared by permission, and still have copied the unusual title absolutely correctly. I do not desire to take up more unnecessary space. My innermost desire is to correct the gross imposition upon the society before whom this paper was read in April, upon the editor of the SUMMARY, and upon the Michigan State Dental Society, whose exclusive property this article became immediately after its reading by myself in 1907. As for myself, as its author, I feel greatly honored to have my work thought of so much as to be worth copying and appropriating, even if "A book is a book, though there be nothing in it!" Let us hope that the re-reading, however, will be productive of good results, and that the Allen County (Ohio) Dental Society will take up the much-needed work of educating the public regardless of which was born first, the hen or the egg! In closing I must confess to Dr. Wittenbrook that I am indeed sorry not to be able to comply with his request to send him the complete article, it being copied very completely, nothing of importance remaining.

Yours sincerely,

GEO. ZEDERBAUM,
Charlotte, Mich

ERRATA

In justice to Dr. Ames we wish to make this statement regarding his article on "Silicious Cements," that appeared in the November issue: Only galley proof was furnished The Summary, but it was understood that it was from Dr. Ames' revised copy, but now appears to have been in part the stenographer's transcription of a reported talk—Dr. Ames being absent from home from the time our type was set until after the matter had to go to press for November number, made it impossible for him to verify the text as set from copy furnished The Summary. At our request Dr. Ames has kindly written the following corrections.—Editor.

The third paragraph on page 855 should have appeared after the first paragraph of page 856, and should read as follows: "Probably some of you recall attempts at making a paste to take the place of cement liquid, such as the Desano & Hussey pasty acid, which passed into oblivion in a short time, the same as the Fletcher paste and similar attempts. It is quite possible that Flecher's materials were faulty because of the attempt to use these pastes instead of an acid solution."

The second paragraph of page 857 should have appeared in advance of the previous paragraph and should read as follows: "The latest patent on anything of this kind was granted to W. V-B. Ames, on a mixture of a fluo silicate and phosphate."

The gist of the matter beginning with second paragraph, page 861 to the end of the article, should read as follows: In some early tests of these cements for discoloration, by subjection to sulphuretted hydrogen, results were obtained which led to erroneous conclusions as to the comparative value of different specimens, because of unrecognized conditions which are often of the utmost importance. In testing Ascher Enamel, for instance, the white or No. 6, would show no discoloration, and some other shades practically none when submitting pellets presenting continuity of the original surface, while in later experiments, in submitting pellets having abraded spots and broken edges, there would be a marked discoloration of all numbers except No. 6 (white), which stain would penetrate to a considerable depth and be ruinous to the texture. Some specimens, such as Schoenbeck's and Ordell's, exhibited discoloration, with or without abrasion of the surface, even in the white variety, but the stain was upon the mere surface only. Another peculiarity developing in the course of the tests was that with the Ascher, the stain was permanent after transferring the pellet from the sulphid solution to plain water, while with Schoenbeck's and Ordell's, for instance, the surface discoloration proved to be soluble in water and would entirely disappear in a short time.

Of all specimens tested, the Ascher was in a class by itself in behavior in this respect, all other specimens showing surface discoloration only, and this surface stain being more or less soluble in plain water. As to an unbroken surface of Ascher cement being more resistant than a surface resulting from fracture or abrasion, I will not offer a theory. The producers are probably aware of this advantage, since they lay much stress on retaining the original surface. Since the actual original surface is so transitory, many unsatisfactory results are accounted for in the light of these tests.

It has been demonstrated that Ascher's No. 6 white powder can be pigmented to all desirable colors and shades by the use of proper metal oxid and mineral pigments, to give materials free of tendency to discoloration under mouth conditions.

THERE is this difference between education and culture: Education is knowledge of essential facts; culture is the acquired skill in their application to and use in the affairs of life. Education, therefore, is knowledge; culture is action. Education is static; culture is dynamic.

PRACTICAL SUGGESTIONS

A DIFFICULT INLAY

T. B. Nottingham

I was recently presented with a tooth for preservation, which being of a somewhat difficult nature, and successfully completed in an unusual manner, may form an interesting item to readers.

It was the first upper bicuspid (right) of which decay had entirely destroyed the front wall next to the perfect canine standing right in front of it.

On opening up, root treatment, filling, etc., was found necessary, after which a large cavity was left with a good recess towards the roots, the labial wall intact, the lingual wall and occult surface only very slightly destroyed.

The tooth was evidently too good for a crown, the cavity too large for a filling, but eminently suitable for an inlay, but the difficulty was getting the impression out, and the inlay inserted with the canine standing in front right in the center and close to the cavity. On talking the case over with some dental friends, they considered it impossible without cutting away the portion of the lingual wall that remained. This I was anxious and eventually able to avoid by firstly filling (with a temporary cement) the recess towards the roots, then with a rosehead burr, making the cavity perfectly round (preserving retention on the labial side), and finally smoothing the surface of it with a fine pointed stone. The cavity was then slightly oiled, the wax inserted and the impression obtained, using a celluloid matrix and burnishing the edges with rubber dam. A groove was carefully carved on the surface immediately opposite the canine, then the impression was removed with a careful circular movement to the lingual side, the groove allowing it to roll around canine. The temporary filling was then removed from the recess and on the top of the impression a slight cone was built up in wax.

When the cast was complete (with a little filing down of the cone on the top), I was able to insert it into the cavity with an inward rotary movement, the groove again allowing it to pass canine, the whole thing having a similar appearance to a ball and socket joint.

Finally I had the satisfaction of seeing a perfect fitting inlay fixed without unnecessary destruction of the walls, and of knowing it was further held (similar to a peg crown) by the cone in the recess, and moreover the groove was not perceptible being immediately behind the canine.—*British Journal of Dental Science.*

METHOD OF USING PRESSURE ANESTHESIA

By James H. Beebee, Rochester, N. Y.

The way I use pressure anesthesia for pulp extirpation is first, of course, to expose the pulp, which is usually done with one or two sharp quick cuts of a spoon excavator, the point of which is large enough to prevent puncturing the pulp; then a piece of cotton which has been wet with a 1 to 1,000 solution of mercuric bichloride to which has been added a little cocain is placed in the bottom of the cavity and soft rubber super-imposed and pressure induced by a piece of soft pine wood, the end of which has been previously whittled to approximately fit the cavity. In this way there is far less danger of breaking a weak wall and better pressure on the desired point is gained.

In case the engine has to be used to expose the pulp, do it with a large, round bur so that a puncture is not easily produced. The bichloride is a disinfectant and there is small chance of infection where it is used.

After the removal of the pulp I usually fill immediately, filling the canal with cotton well soaked with a paste of oxpara and packed hard; first, however, to prevent soreness, place a very small piece of cotton soaked with oil of cloves and zinc oxid at the apex and then force the oxpara well into the cavity, packing it with the broach and other pointed instruments. Many may object to the cotton, but I see no cause for the objection, as the paste is forced to its place by the vehicle of cotton. If the oxpara will in a paste form preserve the root, it will also care for the cotton, and I believe the root will be more thoroughly filled than when gutta-percha points are used.—*Dental Digest*.

CROWNING OF SENSITIVE TEETH

By James H. Beebee, Rochester, N. Y.

In cases where from undue sensitiveness or other causes it is difficult to cut down the occlusal surface of a tooth that is to be crowned with gold, and it is desired to have as much gold as possible to give wear, first make the band of 22 k. gold and trim it down till its edge is a little below flush with the occlusal surface and solder on piece of 24 k. gold about 36 gauge thick. Force this onto the tooth and burnish this thin gold onto the tooth; remove and build up the occlusal surface of the crown on this thin gold. File and cut to occlusion. You will then have all the gold possible over the crowned tooth and reduce the liability to wear through.—*Dental Digest*.

HOW TO FILL ROOT CANAL WITH CEMENT

By James H. Beebee, Rochester, N. Y.

In setting a crown that has a pin for the pulp canal it is often difficult to be assured that the cement is in the bottom of the canal. Place a dab of cement over the cavity, and with a fissure bur in the hand-piece, reversing the engine, work the cement quickly to the bottom. I accredit this to Dr. Line.—*Dental Digest*.

LOST CASTINGS—CAUSES AND REMEDIES

F. H. Nies, Brooklyn, N. Y.

I believe the investment material should be thoroughly heated; success is more certain when this is done. Thorough heating makes the investment more porous and allows through the porous investment the dispersion of air that might be occupying the place of the wax model. *Heated*, it does not immediately *chill* the molten gold, but often allows pent air in a dense investment to escape beside the molten metal as it comes through the sprue channel. This is often seen in the separated column of gold. The gold, filling the space left by the wax model, displaces a bubble of air which, in its effort to escape, separates the molten column.

Underheating a mold is at times the cause of a lost casting. The heat generated in melting the gold causes steam to form in the investment, which, forcing its way out through the sprue hole as we attempt to drive the molten metal in, nullifies the pressure. A cold or damp mold frequently causes the metal to recoil (or spit up), thus forming imperfect edges by its failure to lay up against the mold. A cold mold is denser than a heated one, and does not allow the dispersion of air through the investment material.

Castings are also lost by overheating. If heated too much or by too powerful a flame, the molten metal is liable to fuse the plaster, and the fluxed plaster passes into the mold as a slag, thus preventing a perfect adaptation of the metal. It also has the disadvantage of causing the fused plaster to adhere to the inlay, making an unclean casting. This can be remedied, however, by coating the wax with black lead before investing. Large castings, such as *plates* and *bridges*, should be thoroughly and uniformly heated till they glow, and cast while very hot. This is necessary, for were they cast into a cold mold, the metal would speedily chill before reaching the extreme ends.—*Items of Interest*.

INSPECTION OF THE INLAY

By Dr. Lane

A most efficient means of preparing an inlay before setting it is to go over it with a little magnifier and then remove any little particles you may find, thus allowing the inlay to take its position easily.—*Pacific Dental Gazette*.

A NEW DIE METAL

By James H. Beebe, Rochester, N. Y.

I will reveal the formula for what, so far as I know, is a new metal for dies for gold plates. It is composed of equal parts of zinc and tin. It has absolutely no shrinkage, and it permits of the counterdie of lead being cast upon it. Care, however, must be taken not to handle it when at all hot, as at a temperature of even 500 degrees it is somewhat plastic and easily broken.—*Dental Digest*.

THE LOCK JOINT MATRIX FOR PORCELAIN JACKET CROWNS

By Robert Steele, Chicago, Ill.

The open or soldered matrix has many serious objections, such as change of shape, distortion of platinum, difficulty of burnishing over solder, removing platinum from finished crown and volatile gases resulting from solder.

In my new method these objections are entirely eliminated and we have such precision of contact that the entire matrix tightly hugs the model. Place the platinum foil 1/1000 firmly over labial surface of the cement tooth or model, draw the two ends together, holding firmly with fingers and thumb. By digital manipulation of the thumb and fingernail make the platinum closely conform to the outline of model and be careful to sharply outline the shoulder. Remove and trim away excess of platinum below the shoulder and anneal if necessary. Replace on model and cut platinum for the lap, removing excess, leaving sufficient, however, to slightly more than cover the end. Draw the lap down firmly to place, bring the sides closely together and trim, leaving sufficient for a double lock made by bending together and over *twice* the two ends and firmly place joint against lingual surface. Burnish until smooth and free from all wrinkles. The result will surprise you and will be practically a perfect fit, with no ends to spring or fall apart, for they are safely and securely locked.—*Dental Review*.

ANESTHETIZING LOWER MOLARS

By B. Bennette

The lower molars are, taking it all around, the most difficult teeth to anesthetize. Leaving out of consideration the difficulty of access, the gum tissue on the buccal surface is often so thin, and the bone so dense on both sides of the teeth that it is harder to get a satisfactory degree of analgesia than in other parts of the mouth. Inject on the lingual side first very thoroughly; on the buccal surface inject just in front of the anterior root, closely against the alveolus from the start. Then withdraw the needle and insert it again in a slanting direction between the roots, and use firm pressure. The patience required in this procedure will be rewarded with complete absence of pain, and satisfaction to both patient and surgeon.—*British Journal of Dental Science*.

NON - ABSORBENT COTTON

By E. C. Duryee

Before commencing to operate, prepare a few pledgets of non-absorbent cotton, and have them in readiness. Dry the interior of the tooth and operate until the rising tide of saliva threatens, or you wish to prepare the medicament or mix your filling material; then insert one of the non-absorbent pledgets firmly in the cavity, and even though the tooth may be submerged, the interior of the cavity will remain dry until you remove the cotton and enter on another stage of the operation.—*Dental Scrap Book*.

METHOD OF BRIDGING FOR MISSING CENTRAL

By Bertram C. Best

Suppose a case presents with a missing upper central: how are you going to retain the dummy tooth? Full gold crowns on the lateral and central? We hope not. Open face crowns? Again we hope not. Richmond crowns? Serviceable and natural in appearance, but what a ruthless destruction of pulps and sound natural crowns—platinum pins in both root canals? Nice in appearance, but open to the same objection of the destruction of pulps. A small plate? Obviously not.

My method is this. Grind off the articulating surface of central and lateral to allow for a thickness of gold about 20 gauge between occluding teeth, with a knife edge stone cut two grooves or steps crosswise, one near incisal edge, the other about the basilar pit, then with a No. 2 bur drill three holes perpendicular with the long axis of the pulp to form the step near the incisal edge the other about the location of the basilar pit, taking care not to encroach too closely to the pulp.

In these holes place iridio platinum or platinum pins taken from vulcanite or plate teeth. I use pins from the vulcanite teeth for the incisal holes and a plate tooth pin for the center hole, as I usually make that deeper.

When the pins are in position, warm some inlay wax, Peck's or Taggart's, and press on the surface embedding the pins; remove, and if the pins do not come out with the wax their position is shown. I now heat each pin and set it back in the wax in its original position as neatly as possible, and allow it to cool, thus insuring its withdrawal in the wax pattern; now replace, trim approximately, have the patient bite, then trim accurately, see the contour of the tooth is restored and no shoulder is left to annoy the tongue or catch food.

I always fasten sprue wire before removing wax, to prevent any possible distortion and fasten it in such a place as not to interfere with the occlusion. After casting is finished, cut sprue stem off to within $\frac{1}{8}$ inch to insure correct place in impression, take bite and impression, and finish bridge in the usual manner, taking care that no solder runs down on under side of hoods. When finished, you have a bridge that shows no gold, you still have your vital teeth, your natural crowns, a perfect articulation and one that will stand any kind of service.—*Pacific Dental Gazette*.

SODA FOR STERILIZING ROOT CANALS

To sterilize root-canals before filling, a solution of fifty per cent. of caustic soda may be applied. Care must be taken not to bring it in contact with the gums or the lips, on account of the strongly caustic action of the soda. It is not necessary to dry the root-canals with hot air. It suffices to carefully clean the canals with cotton dipped in alcohol and finally in chloroform.—*Les Annales Dentaires*.

AMERICAN CIRCULATING DENTAL CLINIC



MAP SHOWING DISTRICT CENTERS.

The Centers are indicated by white figures on black ground, surrounded by a circle. The states included in each district are numbered to correspond with the number of the district.

The Cleveland Dental Society has appointed a committee known as the American Circulating Dental Clinic. The object of this committee is to bring about an interchange of clinics with a number of cities, representing seven sections of the United States. Each local society is to appoint a similar committee to co-operate with all the others. The duty of these committees is to collect the best possible clinics obtainable in the several districts. These clinics are to be made up of new devices, new methods, superior pieces of workmanship, or anything of sufficient educational interest to be considered of importance to the profession.

There are many valuable ideas and appliances not available to the profession, simply because the originator is not a contributor to the magazines or is too busy to exploit them. The committees mentioned will be able to take up these improvements and present them to the profession in the different districts, one after another.

When the clinics are arranged for proper exhibition they will be shipped to the various centers one after another until they have made the entire circuit. One round of the circuit would consume practically one year. When each clinic has completed the rounds it will be taken out and a new one substituted.

Cities shown on the map have been chosen as best representing the several sections of the country, and the Cleveland Society hopes to receive immediate and encouraging co-operation. All working together, these meetings can be made the largest and best exhibitions of progressive dentistry ever seen.

Circulars explaining the object are being sent out by the Cleveland Society, and it is suggested that those interested immediately get into correspondence with the Central Chairman, Dr. S. Marshall Weaver, 726 Rose Bldg., Cleveland, Ohio.

SOCIETY ANNOUNCEMENTS

AMERICAN CIRCULATING DENTAL CLINIC IMPORTANT REQUEST

Every dentist in the United States should be deeply interested in the success of the American Circulating Dental Clinic, and to make it a success every man should volunteer any new method or device he may have to the chairman of his section and *do it now*.

We are collecting the clinics as fast as possible and the sooner we get the required number the quicker you will have a chance to see them at the "big clinic day" in your section.

WANTED:

We are going to have an exhibit of office stationery, records, cards, and all business stationery and expect to exhibit about twenty of the best outfits. If you have anything new or good in this line send it to the Central Committee at once.

We are also going to have an art department for the exhibit of pieces of art executed by dentists but not pertaining to dentistry. Please send any article of this nature to the Central Committee.

Watch these want columns and give us all the assistance you can.—Central Chairman, S. Marshall Weaver, Rose Bldg., Cleveland, Ohio.

THE G. V. BLACK DENTAL CLUB CLINIC

It is a pleasure to announce that the program is almost prepared for the Annual Clinic of the Club, which will be held in St. Paul on February 24 and 25, 1910.

The members of the club will make operations on the first day of the clinic, while the second day's operations will be made by the members of other study clubs.

Essays will be read by Drs. Barnes of Seattle, Chappel of San Francisco, Friesell of Pittsburg, C. N. Johnson of Chicago, and C. E. Woodbury of Council Bluffs, Iowa.

Thursday evening Dr. G. V. Black of Chicago will deliver a lecture which will be illustrated.

The profession generally is invited to attend the meeting. The program for the clinic will be published later.

For further information, address R. B. Wilson, Secretary, 409-10 Am. Nat. Bank Bldg., St. Paul, Minn.

INSTITUTE OF DENTAL PEDAGOGICS

The seventeenth annual meeting of the Institute of Dental Pedagogics will be held at the King Edward Hotel, Toronto, Canada, December 28, 29 and 30, 1909.

The Institute is composed of dental teachers of the United States and Canada. An excellent program has been prepared, and matters of vital interest in the advancement of dental education and under discussion. Interesting and valuable teaching methods and appliances will be exhibited.

Dental teachers, examiners and ethical practitioners who are interested in the advancement of dental education are cordially invited.

Further particulars can be had from the Chairman of the Executive Board, Dr. H. E. Friesell, Dental Department, University of Pittsburgh, Pittsburgh, Pa.

PENNSYLVANIA BOARD OF DENTAL EXAMINERS

The Board of Dental Examiners of Pennsylvania will conduct examinations simultaneously in Philadelphia and Pittsburg, December 8 to 11, 1909.

For application papers or other information address Dr. Nathan C. Schaeffer, Secretary Dental Council, Harrisburg, Pa.

NATIONAL ASSOCIATION OF DENTAL EXAMINERS

The twenty-eighth annual session will be held at Denver, Colo., on Monday, August 1st, 1910, commencing at 10 A. M.

Hotels and railroad rates will be given in a later issue. J. J. Wright, D. D. S., President, Wells Bldg., Milwaukee, Wis.; Charles A. Meeker, D. D. D., Secretary and Treasurer, 29 Fulton St., Newark, N. J.

The next meeting of the Indiana State Board of Dental Examiners will be held at the State House, Indianapolis, January 10th to 14th. All applicants for registration in Indiana will be examined at this meeting. For further information address the secretary, F. R. Henshaw, 507-8 Pythian Building, Indianapolis, Ind.

The Idaho State Dental Board will hold its regular Winter meeting at Boise on December 29-31, 1909. All applications, with the fee of \$25.00, should be in the hands of the secretary not later than December 27.

For any information and blank applications address J. H. Burns, Secretary, Payette, Idaho.

The Iowa State Board will hold a meeting for the examination of candidates for license to practice dentistry in Iowa, beginning January 10th, 1910, at 9:00 a. m., in Des Moines. For blanks and other information write the secretary, E. D. Brower, Le Mars, Iowa.

OBITUARY

John Trimbell Metcalf, D. D. S., who was born in Manhattan in 1818, died of the effects of age in his home in Brooklyn, N. Y., October 29, at the age of 91 years. He was born at the corner of Broadway and Liberty street, where at the age of twenty-two he started the practice of dentistry. Later he moved to Broadway and Thirty-fifth street, retiring, after fifty years' practice, fourteen years ago. He is survived by a son and a daughter.

Here ends the earthly career of one of New York's good dentists. An inborn gentleman, his career as a dentist has been unimpeachable, always standing for first-class conservative practice.

He was a cousin of the late Dr. Wm. H. Allen, so popularly known in New York as "Sweet Willie." This did not place him as weak—far from it. He also stood high for first-class dentistry.

Dr. Metcalf became the associate of Dr. Allen in his later life, and after his demise, his successor. Dr. Metcalf was never an aggressive society dentist but in practice his standard was high. His genial nature made him a strong favorite with all that had his acquaintance; because of this we pay this tribute:

He has a worthy follower in his son, a well known dentist, on much the same lines as his father, in New Haven, Conn.—Dr. G. Alden Mills, New York.

November 6.—Dr. C. E. Davis, Fostoria, O., aged 80 years.

Dr. Davis, one of the best known Masons in Ohio and the only one in Fostoria to attain the coveted honor of the 33d degree.

He was born in Greensboro, Md., November 26, 1829. Dr. Davis was graduated in dentistry in 1856. He made the trip overland to California, practicing his profession in San Francisco until 1868, when he returned to Fostoria to care for a widowed mother.

Dr. Davis was made a Mason, January 11, 1864, by Crocket Lodge No. 139, of San Francisco. He was made a life member of all the A. & A. bodies of Maumee Consistory, June 11, 1896; was elected to receive the honorary 33d degree at Milwaukee, Wis., September 11, 1909.

Dr. Davis was never married, but is survived by three sisters and a brother.

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NEWS AND OPINIONS

In the carrying out of its plan for popular education along dental lines, THE SUMMARY has several times been met by objections on the part of newspaper publishers to printing the material furnished on the ground that as dentists did absolutely nothing for them they could see no reason why they should do anything for the dentists.

While this may be considered a narrow view of the matter, taking into consideration the immense amount of public good that cannot fail to result from the movement, it is a view-point not at all hard to understand or appreciate.

Many copies of newspapers are reaching this office, containing extracts from our Educational Bulletins, and it is rare that one of them contains so much as the professional card of a dentist.

Such cards cost but a trifle, and every dentist who is interested in the great educational movement owes it to himself and to his profession to contribute that trifle. The carrying of such cards means a great deal to the proprietors of poorly-supported newspapers, who have a hard struggle at best; and they mean much more to those who are carrying on the work of education.

If every dentist would, right now, go to his local publisher and give him an order for the continuous insertion of his professional card, the result would be immediate. Many columns that are now closed to our material would be opened up gladly, and the result would be worth many times its cost.

There is nothing in the Code to prevent this. As a matter of fact, there is an express stipulation that there is no intention to prevent it. "But nothing in this section shall be so construed as to imply that it is unprofessional for dentists to announce in the public prints * * * simply their names, occupation and place of business."

Here is the usual form:

JOHN M. LUDLOW, D. D. S.,
Practicing Dentist.
Room 334, Union Hall Block,
Newport, Ky.

Office Hours: Ten a. m., to five p. m.,
and by appointment.

The cost of such a card in the average

newspaper of, say, 1000 to 1500 circulation, would rarely exceed \$5.00 to \$10.00 per year; sometimes even less, while the publication of the educational matter supplied by THE SUMMARY is sure to bring untold good to thousands now suffering from diseases that have been, time and again, traced to lack of care of the teeth.

Of course, the publication of such a card is not advertising; it does not create wants; it can be classed at best only as that passive sort of publicity represented by a city directory, to which one never turns unless a want already exists. But it will act as an opening wedge; it will dispose editors and publishers to consider favorably the publication of educational stuff that is sure to result in benefit.

Reciprocity.

The Ohio State Dental Board now has formal agreements for the mutual interchange of licenses with the Boards of the District of Columbia, New Jersey, Indiana, Illinois, Michigan and Iowa.

The terms are identical in the requirement of five years' legal and ethical practice in the state from which the applicant desires to remove. The agreements with District of Columbia, New Jersey and Indiana also require membership in the State Dental Society and all except District of Columbia and New Jersey require the applicant to pass a practical examination.

In order to secure the endorsement of the Ohio Board, which is in all cases necessary, each applicant to the Board of another state is required to submit the written certificates of at least three reputable dentists of this state testifying to his ethical practice and a certificate of membership in the state or a local dental society.

Unfortunately the requirements for practice are much lower in many states and with these the Ohio Board may not interchange, our law limiting us to such relations with states maintaining an equal standard of requirements.

In several states, due to their geographical location, the influx of dentists would greatly outnumber those leaving and such states are not in a position to interchange.

The subject of reciprocity was one of the live topics at the recent meeting of the National Association of Dental Examiners and as the laws become more uniform the field of reciprocity will widen.

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Annex

